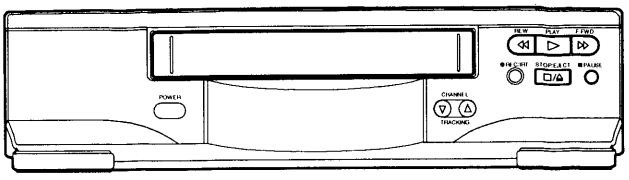
HITACHI

SERVICE MANUAL

TK | No. 4604E

VT-MX411A VT-FX600A
VT-MX411AC VT-FX600AC
VT-MX411C VT-FX600C



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VHS

This video deck is VHS type video recorder. For proper operation, only the VHS type cassette must be used.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CASSETTE RECORDER

May 1996 Image & Information Media Systems Division, Tokai

MAIN SECTION

VIDEO CASSETTE RECORDER

VT-MX411A / VT-MX411AC / VT-MX411C / VT-FX600A / VT-FX600AC / VT-FX600C

MAIN SECTION

- **Specifications**
- **Preparation for Servicing**
- **Adjustment Procedures**
- **Schematic Diagrams**
- **CBA' s**

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SPECIFICATIONS

Description	Unit	Minimum	Nominal	Maximum	Condition
1. Video					
1-1 Video Output (R/P)	Vp-p	0.8	1.0	1.2	
1-2 Video S/N Y (R/P)	dB	42	48		SP Mode
1-3 Video Color S/N AM (R/P)	dB	35	44		SP Mode
1-4 Video Color S/N PM (R/P)	dB	31	38		SP Mode
1-5 Resolution (R/P)	Line	210	230		SP Mode
2. Servo					
2-1 Jitter Low (R/P)	µsec		0.04	0.12	SP Mode
2-2 Wow & Flutter (R/P)	%		0.2	0.5	SP Mode
3. Normal Audio					
3-1 Output (R/P)	dBS	-10	-5	-2	SP Mode
3-2 S/N (R/P)	dB	41	47		JIS A
3-3 Distortion (R/P)	%		1.5	4.0	SP Mode
3-4 Freq. response (R/P) at 100Hz	dB	-6.0	-3.0		SP Mode
(-20dB ref. 1kHz) at 8kHz	dB	-6.0	-2.0		SP Mode
4. Tuner					
4-1 Video Output (E-E)	Vp-p	0.8	1.0	1.2	E-E Mode
4-2 Video S/N (E-E)	dB	40	45		E-E Mode
4-3 Audio Output (E-E)	dBS	-9	-6	-3	E-E Mode
4-4 Audio S/N (E-E)	dB	40	50		JIS A
5. Hi-Fi Audio (VT-FX600A/AC/C Model only)					
5-1 Output (R/P)	dBV	-11	-8	-5	SP Mode
5-2 S/N (A WTD)	dB		70		SP Mode
5-3 Freq. Response at 20Hz	dB	-4	0	+4	SP Mode
at 20KHz	dB	-4	0	+4	SP Mode

Note: Nominal specs represent the design specs. All units should be able to approximate these. Some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable; In no case should a unit fail to meet limit specs.

IMPORTANT SAFETY PRECAUTIONS

Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ⚠ on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Precautions during Servicing

A. Parts identified by the ⚠ symbol are critical for safety.
Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:
1) Wires covered with PVC tubing
2) Double insulated wires
3) High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:
1) Insulation tape
2) PVC tubing
3) Spacers
4) Insulators for transistors

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

G. Check that replaced wires do not contact sharp edges or pointed parts.

H. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector
The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.
Replacement procedure
1) Remove the old connector by cutting the wires at a point close to the connector.
Important: Do not re-use a connector. (Discard it.)
2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.
3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.
4) Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1 : Ratings for selected area

AC Line Voltage	Region	Clearance Distance (d) (d')
110 to 130 V	USA or CANADA	≥ 3.2 mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

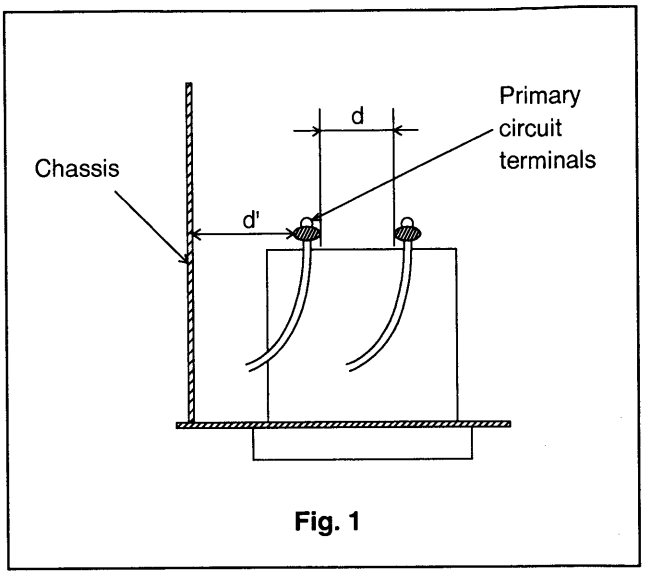


Fig. 1

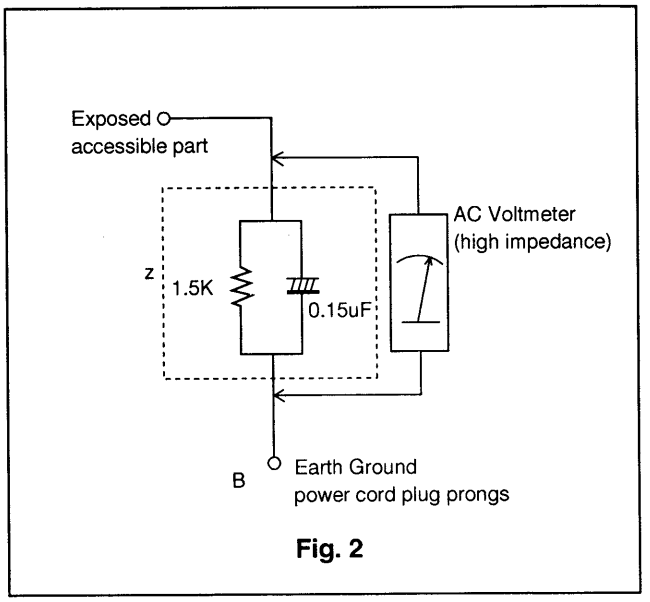


Fig. 2

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method (Power ON) :

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.

Table 2 : Leakage current ratings for selected areas

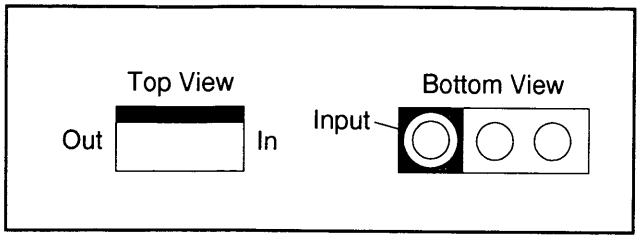
AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
110 to 130 V	USA or CANADA	0.15μF CAP. & 1.5kΩ RES. connected in parallel	i≤0.5mA Peak	Exposed accessible parts

Note: This table is unofficial and for reference only.
Be sure to confirm the precise values.

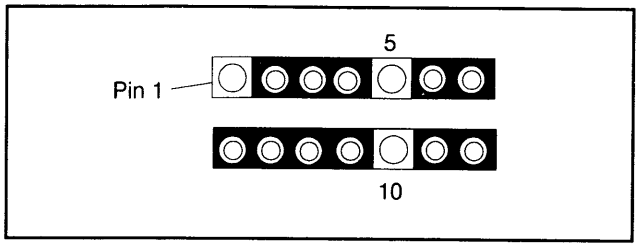
STANDARD NOTES FOR SERVICING

Circuit Board Indications

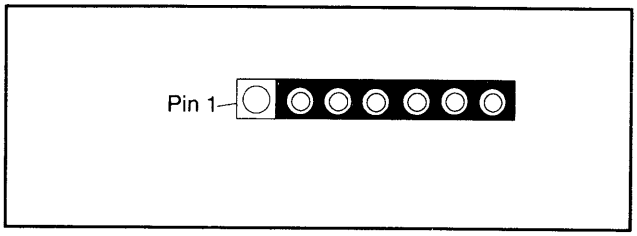
a. The output pin of the 3 pin Regulator ICs is indicated as shown.



b. For other ICs, pin 1 and every fifth pin are indicated as shown.

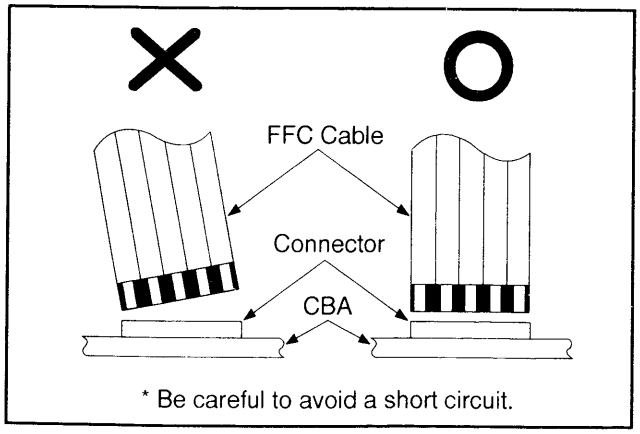


c. The 1st pin of every male connector is indicated as shown.



Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

(1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

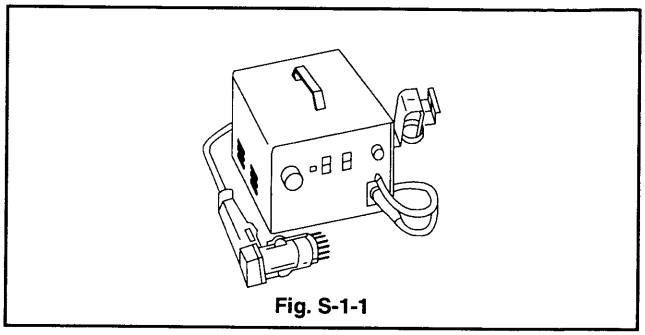


Fig. S-1-1

(2) Remove the flat pack-IC with tweezers while applying the hot air.

(3) Bottom of the flat pack-IC is fixed with glue to the CBA, when removing entire flat pack-IC. First apply soldering iron to center of the flat pack-IC and Heat up. Then Remove (glue will be melted). (Fig. S-1-8)

(4) Release the flat pack-IC from the CBA using Tweezers. (Fig. S-1-8)

Caution:

1. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)
2. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder- lands under the IC when removing it.

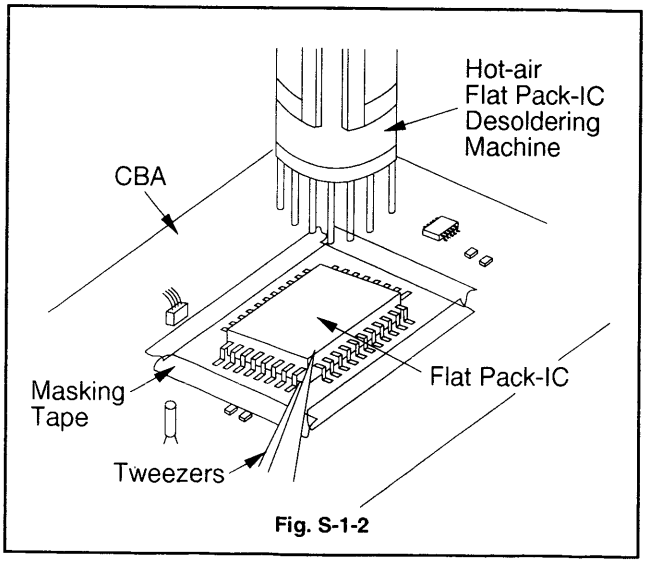


Fig. S-1-2

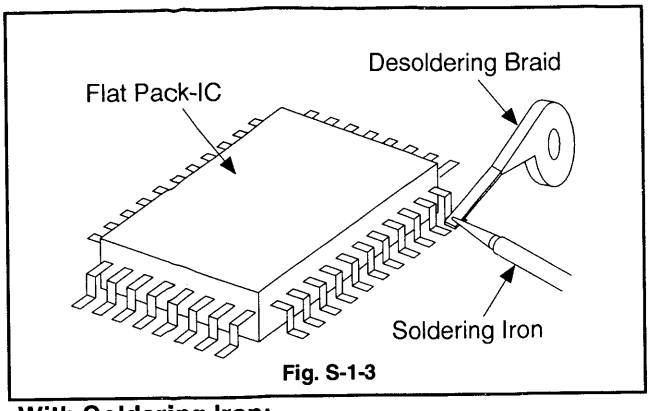


Fig. S-1-3

With Soldering Iron:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

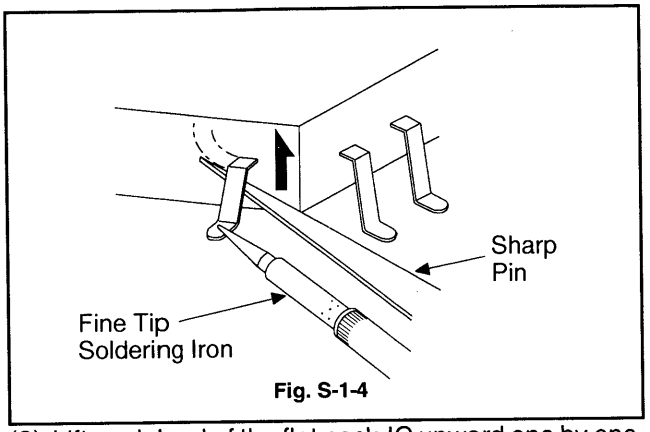


Fig. S-1-4

(2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

(3) Bottom of the flat pack-IC is fixed with glue to the CBA, when removing entire flat pack-IC. First apply soldering iron to center of the flat pack-IC and Heat up. Then Remove (glue will be melted). (Fig. S-1-8)

(4) Release the flat pack-IC from the CBA using Tweezers. (Fig. S-1-8)

With Iron Wire:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig.S-1-5.

(4) Bottom of the flat pack-IC is fixed with glue to the CBA, when removing entire flat pack-IC. First apply soldering iron to center of the flat pack-IC and Heat up. Then Remove (glue will be melted). (Fig. S-1-8)

(5) Release the flat pack-IC from the CBA using Tweezers. (Fig. S-1-8)

Note:

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

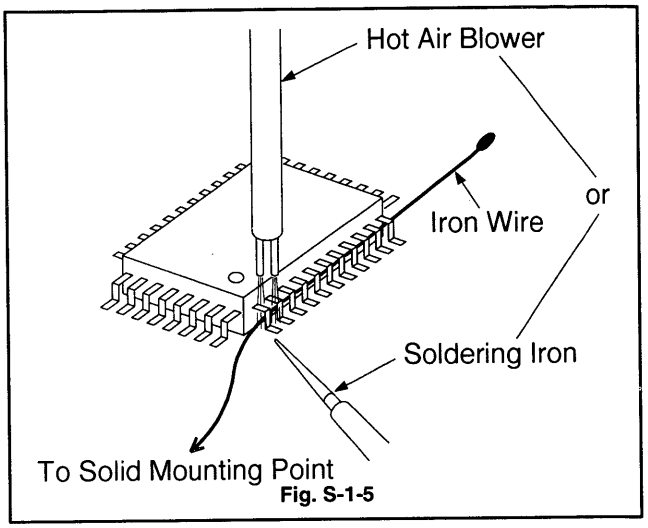


Fig. S-1-5

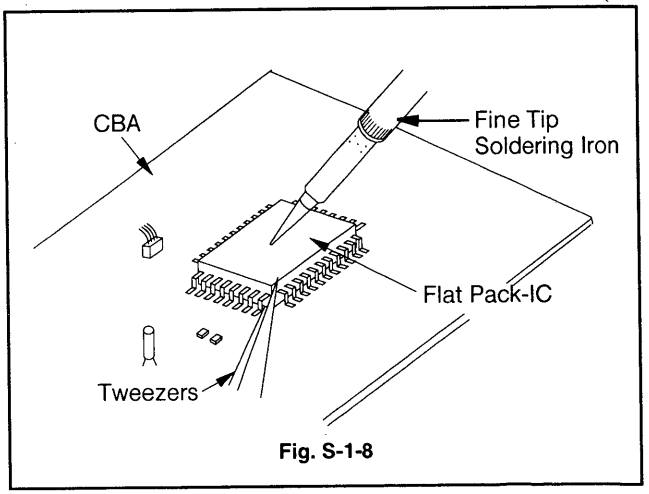


Fig. S-1-8

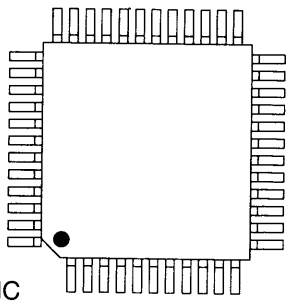
2. Installation

(1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.

(2) The " • " mark on the flat pack-IC indicates pin 1. (See Fig. S-1-6.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then pre- solder the four corners of the flat pack-IC. (See Fig. S-1-7.)

(3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

Example :



Pin 1 of the Flat Pack-IC
is indicated by a " ● " mark.

Fig. S-1-6

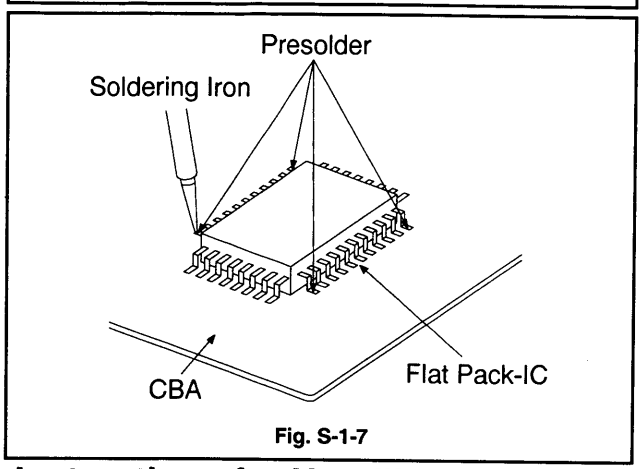


Fig. S-1-7

Instructions for Handling Semiconductors

Electrostatic breakdown of the semiconductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

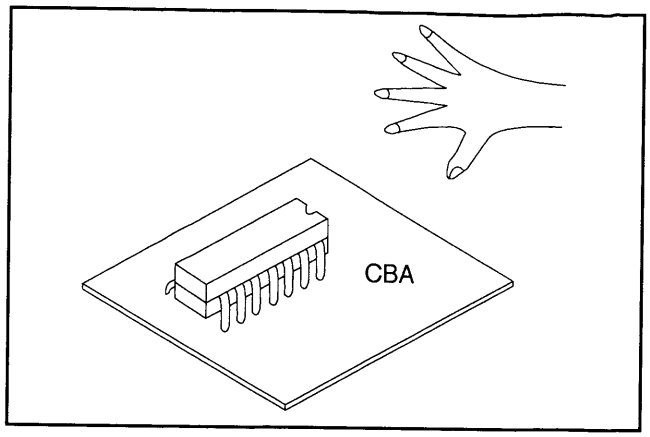
1. Ground for Human Body

Be sure to wear a grounding band (1M ohm) that is properly grounded to remove any static electricity that may be charged on the body.

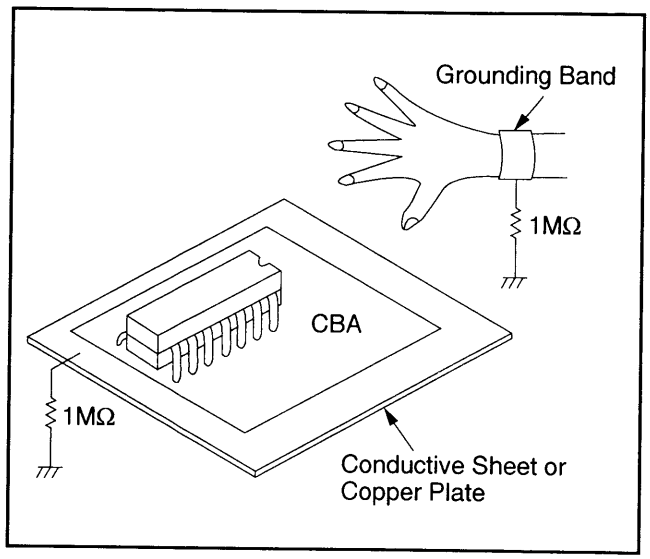
2. Ground for Workbench

Be sure to place a conductive sheet or copper plate with proper grounding (1M ohm) on the workbench or other surface, where the semiconductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semiconductors with your clothing.

Incorrect



Correct



PREPARATION FOR SERVICING

How to use Deck Extension Cable

(1) Remove the Deck Mechanism Assembly. If needed, remove the Main CBA from the chassis. Refer to "Disassembly Instructions" on pg. 1-6-1.

(2) Use the Deck Extension Cable to connect the Deck Mechanism Assembly to the Main CBA. (Deck Extension Cable: 7069120)

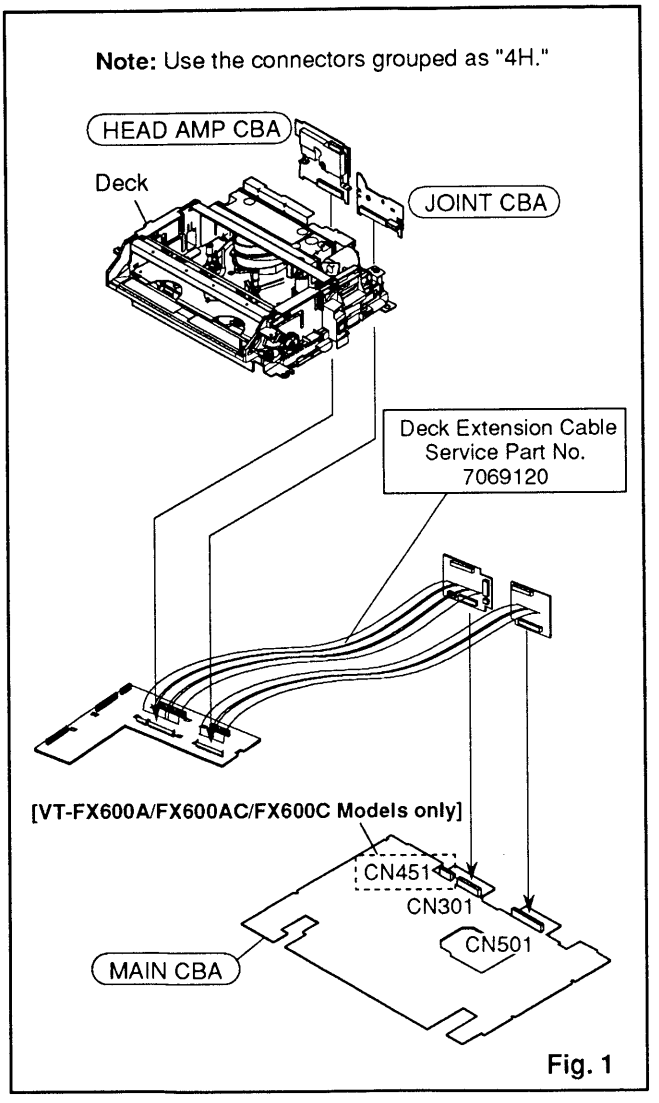


Fig. 1

How to Enter the Service Mode

Note: When the unit is set in the service mode, the whole display will keep blinking.

About Optical Sensors

Caution:

An optical sensor system is used for the Tape Start and End Sensors on this equipment. Carefully read and follow the instructions below. Otherwise the unit may operate erratically.

What to do for preparation

After plugging in the unit, connect TP502 (SENSOR INHIBITION) to TP501 (GROUND). This will stop the function of Tape Start Sensor, Tape End Sensor and Reel Sensors. (If these TPs are connected before plugging in the unit, the function of the sensors will stay valid.)

Insert a tape into the Deck Mechanism Assembly and press the PLAY button. The tape will be loaded into the Deck Mechanism Assembly.

Note: Because the Tape End Sensors are inactive, do not run a tape all the way to the start or the end of the tape to avoid tape damage.

About REC-Safety Switch

Caution:

The REC-Safety Switch is directly mounted on the Main CBA. When the Deck Mechanism Assembly is removed from the Main CBA for servicing, this switch does not work automatically.

What to do for preparation

In order to record, press the Rec button while pushing REC-SAFETY SW on the Main CBA.

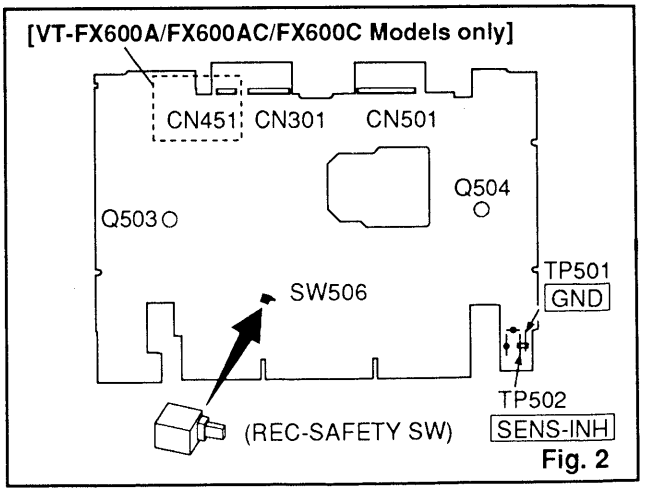
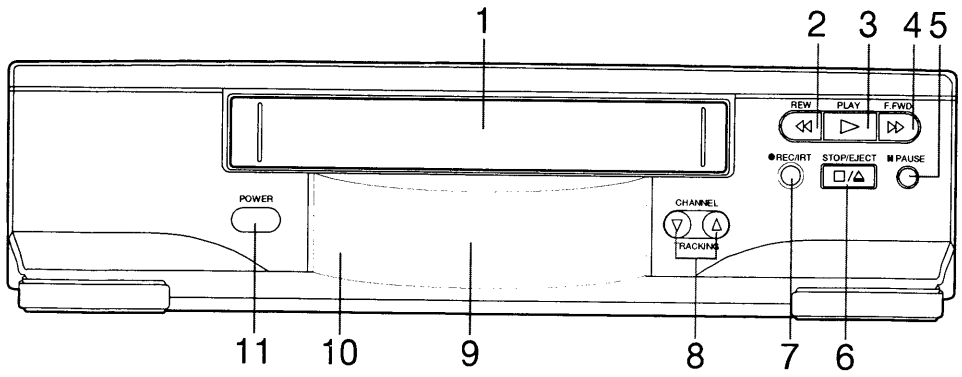


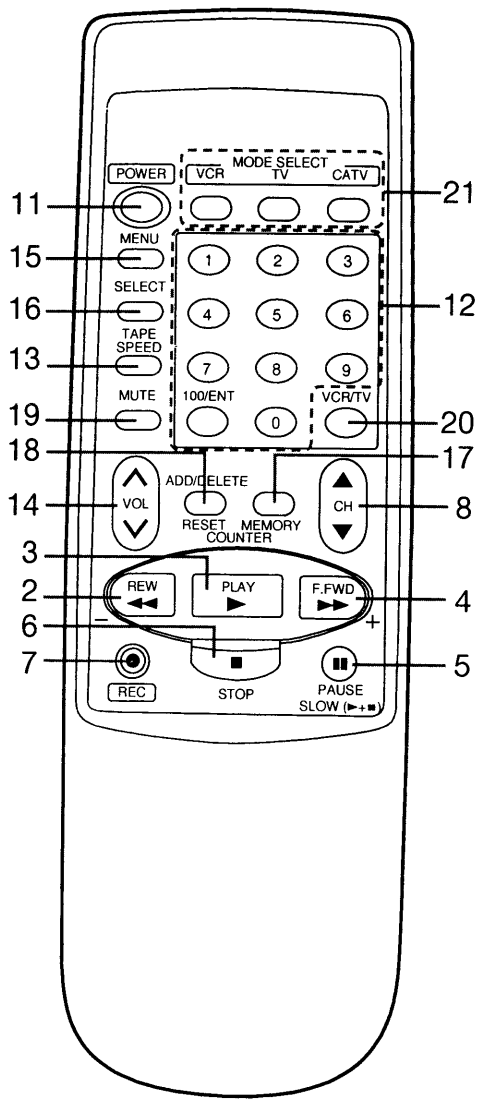
Fig. 2

OPERATING CONTROLS AND FUNCTIONS

—FRONT VIEW—



—REMOTE CONTROL VIEW—



1. **Cassette Compartment**
2. **REW button**–Press to rewind the tape, or to view the picture rapidly in reverse during the playback mode. (Rewind Search)
3. **PLAY button**–Press to begin playback.
4. **F.FWD button**–Press to rapidly advance the tape, or view the picture rapidly in forward during playback. (Forward Search)
5. **PAUSE button**–Press to temporarily stop the tape during recording or to view a still picture during playback.

   Frame Advance Function–Press to advance the picture by one frame during the still mode.
6. **STOP button**–Press to stop the tape motion.

   EJECT button–Press to remove a tape from the VCR. (only on the VCR)
7. **REC button**–Press to begin manual recording.

   IRT button–Press to activate Instant Recording Timer. (only on the VCR)
8. **CHANNEL buttons**–Press to select desired channels for viewing or recording.

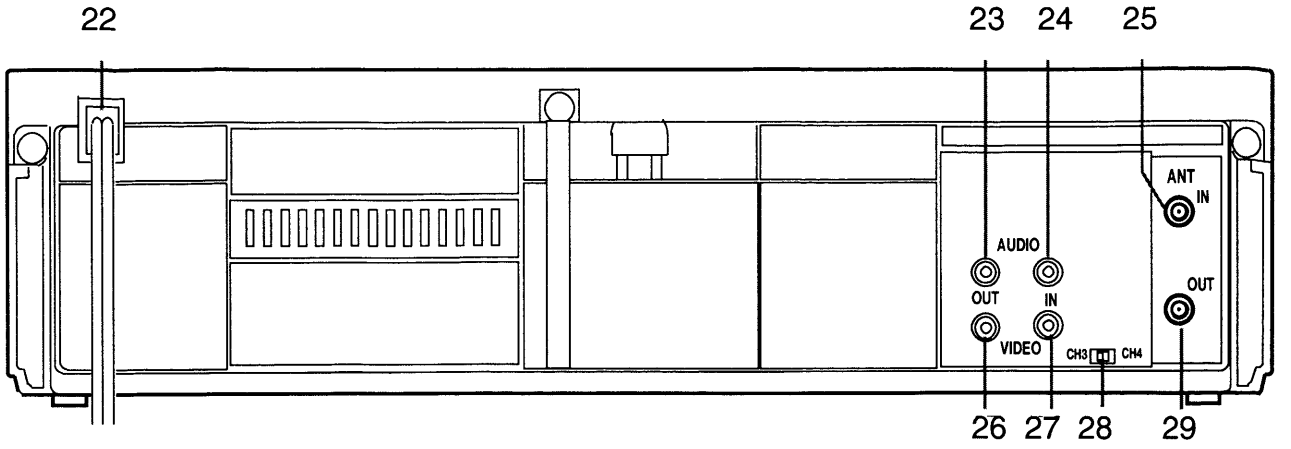
   SET function–Press to enter digits when setting program (for example: setting clock or timer program). Press to select setting modes from on screen menu.

   Tracking function–Press to minimize video 'noise' (lines or dots on screen) during playback or slow mode. (only the VCR)

   Press to stabilize the picture in the Still mode when the picture begins to vibrate vertically.
9. **Digital display**–Displays the clock, timer recording, counter and channel etc.
10. **Remote sensor window**–Receives the infrared signals from the remote control.

Models: VT-MX411A / VT-MX411AC / VT-MX411C

—REAR VIEW—



11. **POWER button**–Press to turn VCR on and off. Press to activate a timer recording.
12. **NUMBER buttons**–Press to select desired channels for viewing or recording. To select channels from 1 to 9, first press "0" button then 1 to 9.

    100/ENT button–When selecting cable channels which are more than 100, press this button first, then press the last two digits. (To select channel 125, first press "100/ENT" button then press "2" and "5").
13. **TAPE SPEED button**–Press to set desired recording speed : SP/LP/SLP.
14. **VOL button**– Press to adjust the desired TV's volume level by using either ▲ or ▼ button.
15. **MENU button**–Press to display the main menu on the TV screen.
16. **SELECT button**–When setting program (for example: setting clock or timer program), press to determine your selection and proceed to a next step you want to input. Press to determine setting modes from on screen menu.

    Status function–Press to display the remain, counter, or the current channel number and current time on the TV screen.
17. **COUNTER MEMORY button**–Press to set counter memory on and off.
18. **ADD/DELETE button**–Press to add or delete channel numbers during channel preset. Press to cancel a setting of timer program. Press to correct digits when setting program (for example: setting clock or timer program).

    COUNTER RESET button–Press to reset counter to 0:00:00.
19. **MUTE button**– Press to mute the TV's sound. Press it again to resume the sound.
20. **VCR/TV button**–Press to select VCR or TV mode.

    VCR position: to view playback, to monitor video recordings or watch TV using the VCR tuner.

    TV position: to watch TV or to view one program while recording another.
21. **Mode Select buttons**

    CATV button

    TV button

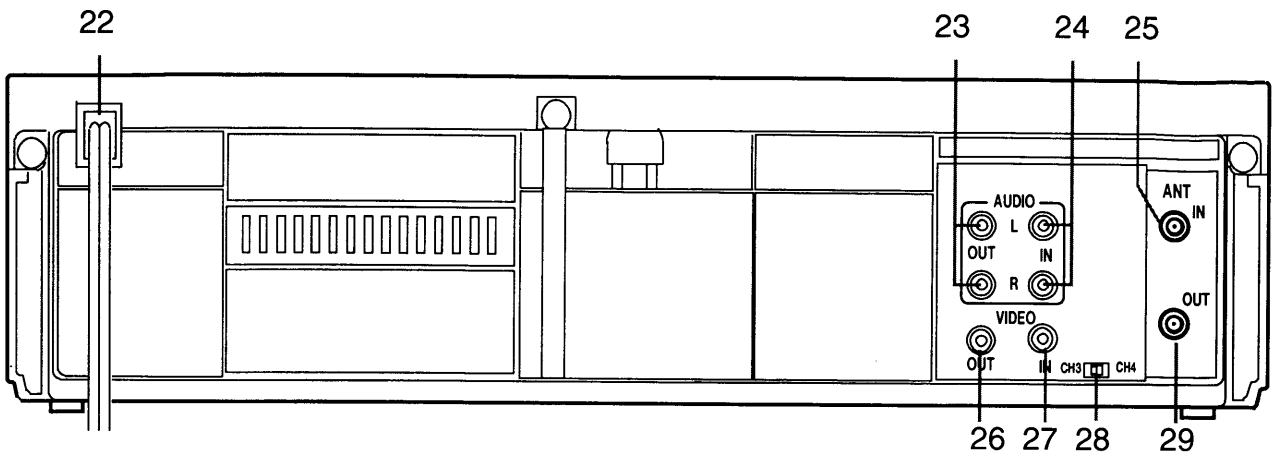
    VCR button
22. **Power cord**–Connect to a standard AC outlet (120V/60Hz).
23. **AUDIO OUT jack**–Connect to an audio input jack of your audio equipment or another VCR.
24. **AUDIO IN jack**–Connect to an audio output jack of your audio equipment or another VCR.
25. **ANT. IN terminal**–Connect to an antenna or CATV.
26. **VIDEO OUT jack**–Connect to a video input jack of your video camera or another VCR.
27. **VIDEO IN jack**–Connect to a video output jack of your video camera or another VCR.
28. **CH3/CH4 selector switch**–Use to select a video output channel (3 or 4) for playback from the VCR.
29. **ANT. OUT terminal**–Connect to an antenna input terminal of your TV.

NOTE:

SLOW Function –Press both PLAY and PAUSE button at the same time to reduce the playback speed. Slow speed can be controlled by pressing F.FWD button (faster) or REW button (slower).

Models: VT-FX600A / VT-FX600AC / VT-FX600C

—REAR VIEW—



11. **POWER button**–Press to turn VCR on and off. Press to activate a timer recording.
12. **NUMBER buttons**–Press to select desired channels for viewing or recording. To select channels from 1 to 9, first press "0" button then 1 to 9.

    100/ENT button–When selecting cable channels which are more than 100, press this button first, then press the last two digits. (To select channel 125, first press "100/ENT" button then press "2" and "5").
13. **TAPE SPEED button**–Press to set desired recording speed : SP/LP/SLP.
14. **VOL button–** Press to adjust the desired TV's volume level by using either ▲ or ▼ button.
15. **MENU button**–Press to display the main menu on the TV screen.
16. **SELECT button**–When setting program (for example: setting clock or timer program), press to determine your selection and proceed to a next step you want to input. Press to determine setting modes from on screen menu.

    Status function–Press to display the remain, counter, or the current channel number and current time on the TV screen.
17. **COUNTER MEMORY button**–Press to set counter memory on and off.
18. **ADD/DELETE button**–Press to add or delete channel numbers during channel preset. Press to cancel a setting of timer program. Press to correct digits when setting program (for example: setting clock or timer program).

    COUNTER RESET button–Press to reset counter to 0:00:00.
19. **MUTE button–** Press to mute the TV's sound. Press it again to resume the sound.
20. **VCR/TV button**–Press to select VCR or TV mode.

    VCR position: to view playback, to monitor video recordings or watch TV using the VCR tuner.

    TV position: to watch TV or to view one program while recording another.
21. **Mode Select buttons**

    CATV button

    TV button

    VCR button
22. **Power cord**–Connect to a standard AC outlet (120V/60Hz).
23. **AUDIO OUT jacks**–Connect to an audio input jacks of your audio equipment or another VCR.
24. **AUDIO IN jacks**–Connect to an audio output jacks of your audio equipment or another VCR.
25. **ANT. IN terminal**–Connect to an antenna or CATV.
26. **VIDEO OUT jack**–Connect to a video input jack of your video camera or another VCR.
27. **VIDEO IN jack**–Connect to a video output jack of your video camera or another VCR.
28. **CH3/CH4 selector switch**–Use to select a video output channel (3 or 4) for playback from the VCR.
29. **ANT. OUT terminal**–Connect to an antenna input terminal of your TV.

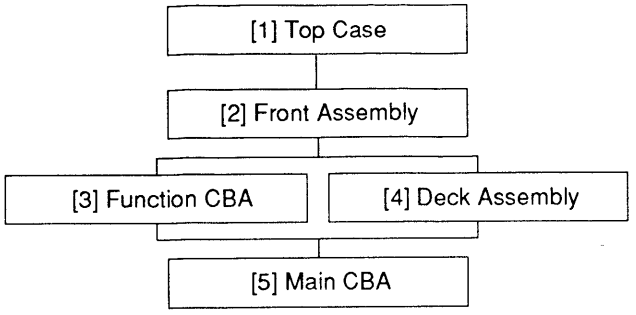
NOTE:

SLOW Function –Press both PLAY and PAUSE button at the same time to reduce the playback speed. Slow speed can be controlled by pressing F.FWD button (faster) or REW button (slower).

DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/UNLOCK/ RELEASE/UNPLUG/ DESOLDER	Note
[1]	Top Case	1	3(S-1)	-
[2]	Front Assembly	2, 3	*7(L-1)	1
[3]	Function CBA	2, 4	*(L-2), (CN502)	2
[4]	Deck Assembly	5	7(S-2), (CN301, CN501)	3
[5]	Main CBA	4, 6	2(S-3)	-
		①	② ③ ④	⑤

①: Identification (location) No. of parts in the figures

②: Name of the part

③: Figure Number for reference

④: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw, CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)

⑤: Refer to "Reference Notes".

Reference Notes

CAUTION: Locking Tabs (L-1) are fragile. Be careful not to break them.

1. Release 7 Locking Tabs (L-1). To do this, first release three Locking Tabs (A) at the bottom, and then four Locking Tabs (B) at the top. (Fig. 2, 3)
2. Disconnect Connector (CN502) to remove Function CBA. Hold Main CBA while pulling up Function CBA. (Fig. 4)
3. Remove 7 Screws (S-2). Then slowly lift Deck Assembly up. Lifting Deck Assembly disconnects 2 Connectors (CN301, CN501). (Fig. 5)

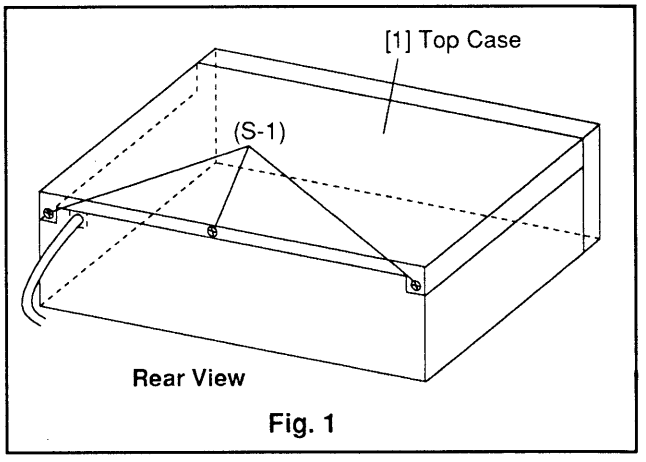


Fig. 1

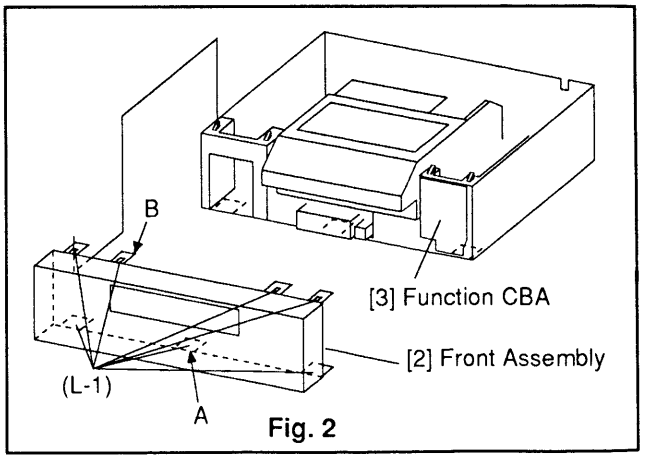


Fig. 2

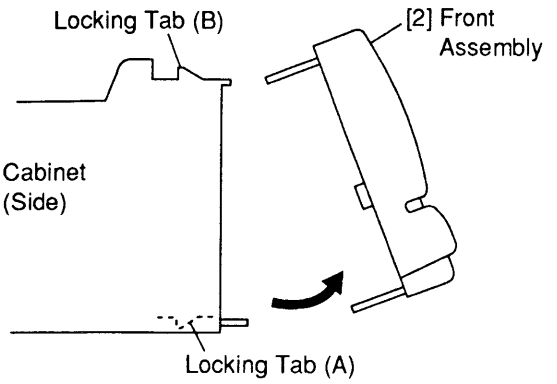


Fig. 3

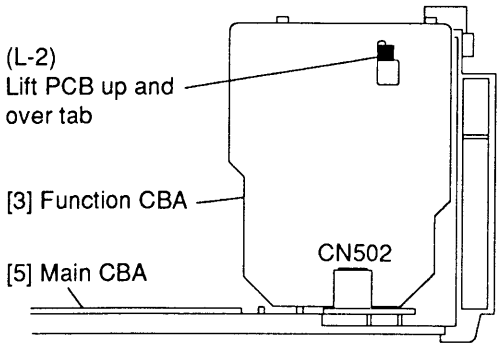
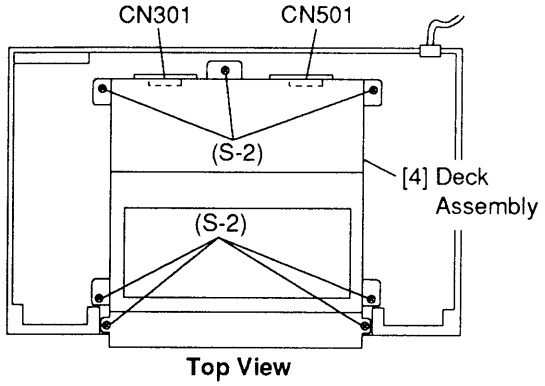
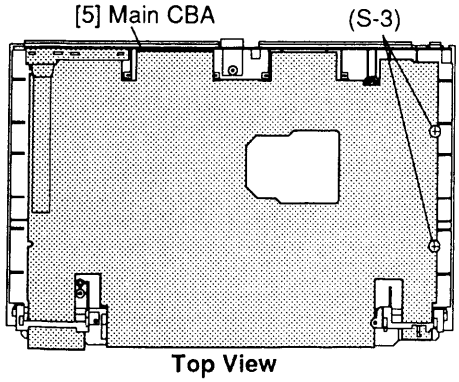


Fig. 4



Top View

Fig. 5



Top View

Fig. 6

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: "CBA" is an abbreviation for "Circuit Board Assembly".

NOTE: Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to do these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required

1. Oscilloscope: Dual-trace with 10:1 probe, V-Range: 0.001~50V/Div., F-Range: AC~DC-20MHz
2. NTSC Pattern Generator(color bar with 100% white)
3. Frequency Counter
4. Audio Generator
5. USA TV Multi Channel Sound Generator
6. TV Modulator
7. TV UPConverter
8. Video Pattern Generator
9. Alignment Tape (MH-1)
10. Blank Tape (Available Locally)
11. TV Monitor

1. Head Switching Position Adjustment

Purpose: To determine the Head Switching point during playback.

Symptom of Misadjustment: May cause Head Switching noise or vertical jitter in the picture.

Test Point	Adj. Point	Mode	Input
TP751(V-OUT) TP302(RF-SW) TP501(GND)	VR501 (Switching Point) (MAIN CBA)	PLAY (SP)	----
Tape	**Measurement Equipment**	**Spec.**	
Alignment Tape (MH-1)	Oscilloscope	6.5H±1H (412.7μs±60μs)	

Connections of Measurement Equipment

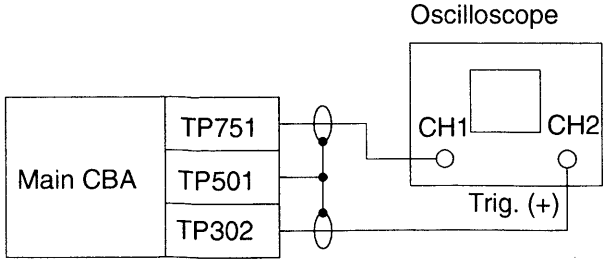
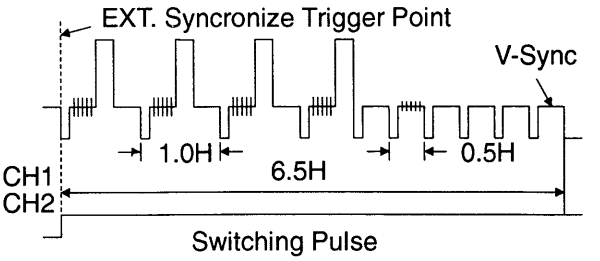


Figure 1



Reference Notes: Play back the Alignment tape and adjust VR501 so that the V-sync front edge of the CH1 video output waveform is out the 6.5H(412.7μs) delayed position from the rising edge of the CH2 head switching pulse waveform.

2. FM Audio Carrier Frequency Adjustment (VT-FX600A / FX600AC / FX600C Model only)

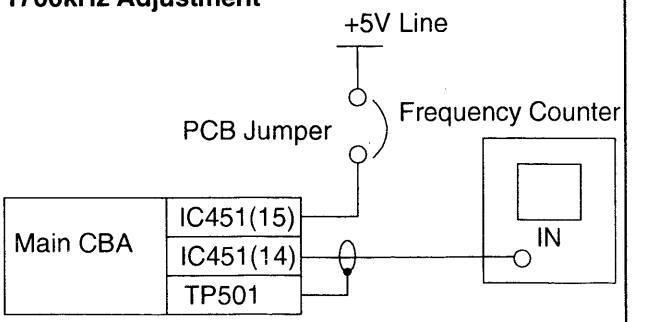
Purpose: To set the FM audio carrier frequency to the optimum level.

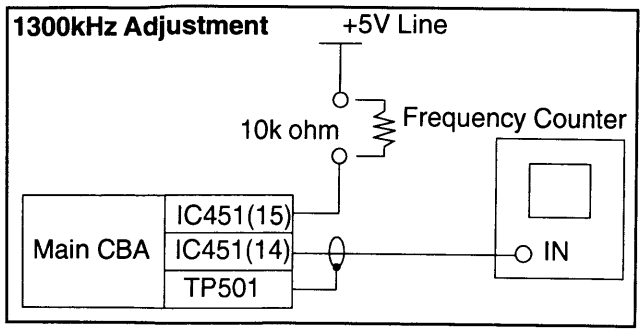
Symptom of Misadjustment: Cannot playback Hi-Fi audio signal correctly which is recorded on the tape by another VCR, and vice versa.

Test Point	Adj. Point	Mode	Input
IC451 (pin14) IC451 (pin15) TP501(GND)	VR451 (CAR) (Hi-Fi Audio CBA)	E-E	—
Tape	**Measurement Equipment**	Spec.	
—	Frequency Counter	(1300±10)kHz (1700±10)kHz	

Connections of Measurement Equipment

1700kHz Adjustment





Reference Notes:

[1700kHz Adjustment]

1. Connect the Frequency Counter IC451(pin14) and TP501.
2. Connect PCB Jumper between IC451(pin15) and +5V Line.
3. Adjust VR451 so that the frequency of the Rch becomes (1700±10)kHz.

[1300kHz Adjustment]

4. Connect 10k ohm(1/4W) Resistor between IC451 (pin15) and +5V Line.
5. Adjust VR451 so that the frequency of the Lch becomes (1300±10)kHz.

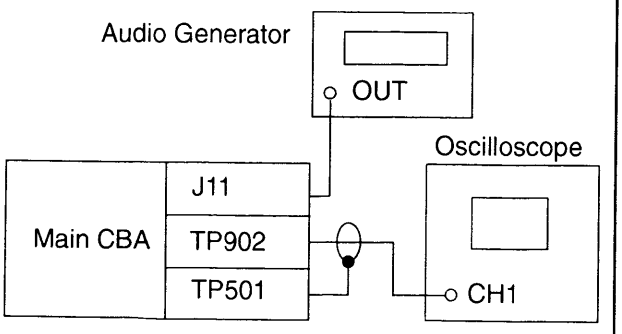
3. Stereo/SAP Filter Adjustment (VT-FX600A / FX600AC / FX600C Models only)

Purpose: To set the carrier of Stereo/SAP detection filter properly.

Symptom of Misadjustment: Can't receive Stereo and SAP broadcast.

Test Point	Adj. Point	Mode	Input
J11(MPX) TP902 (FILTER) TP501(GND)	VR952 (FILTER) (Hi-Fi Audio CBA)	E-E	22.9kHz 100mVrms (283mVp-p)
Tape	**Measurement Equipment**	**Spec.**	
—	Audio Generator Oscilloscope	—	

Connections of Measurement Equipment



Reference Notes:

1. Receive a stereo broadcasting station by using the tuner.
2. Remove C708 from the Main CBA and input 22.9 KHz, 100mVrms (283mVp-p) from the audio generator to J11.
3. Adjust VR952 so that the output level becomes minimum.

Note:

After this adjustment, be sure to do the VCO and MTS Block Separation adjustment.

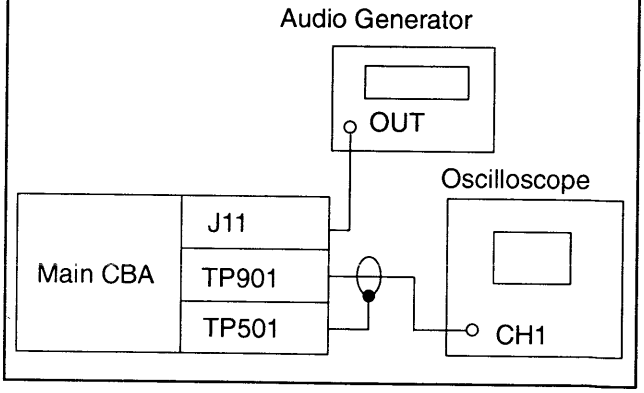
4. VCO Adjustment (VT-FX600A / FX600AC / FX600C Models only)

Purpose: To adjust the reference signal of Stereo/SAP carrier properly.

Symptom of Misadjustment: Can't receive Stereo and SAP broadcast.

Test Point	Adj. Point	Mode	Input
J11(MPX) TP901(VCO) TP501(GND)	VR953 (VCO) (Hi-Fi Audio CBA)	E-E	15.734kHz, 49mVrms (139mVp-p)
Tape	**Measurement Equipment**	**Spec.**	
—	Audio Generator Oscilloscope	—	

Connections of Measurement Equipment



Reference Notes:

1. Set the oscilloscope to DC input mode and set voltage range as high as possible so that the waveform is at the center of picture.
2. Input 15.734kHz, 49mVrms (139mVp-p) signal to J11 using the audio generator.
3. Adjust [5] so that the word "STEREO" can be seen when status button is pressed for TV Channel display.

4. Input no signal to J11 and check DC level of TP901. Next input 15.734kHz, 49mVrms (139mVp-p) signal to J11 and check DC level of TP901. Adjust VR953 so that the level become equal under both conditions.

Note :

Be sure to do the Stereo/SAP Filter and MTS Block Separation adjustments together with adjustment.

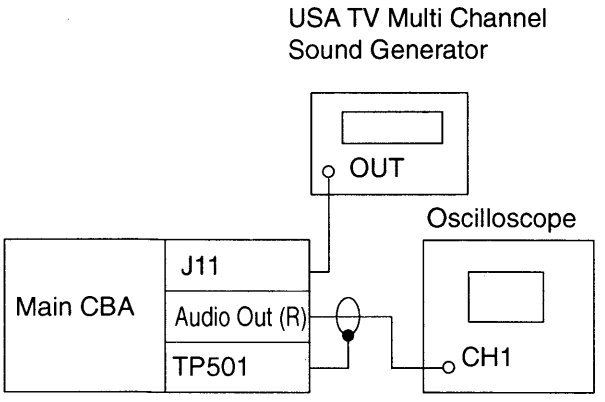
5. MTS Block Separation Adjustment (VT-FX600A / FX600AC / FX600C Models only)

Purpose: To remove the leakage between L ch and R ch of Stereo output.

Symptom of Misadjustment: Voice signal of L ch and R ch may be mixed under E-E and/or REC mode.

Test Point	Adj. Point	Mode	Input
J11 (SEP.) Audio Out (R) TP501 (GND)	VR955 (SEP 300) (Hi-Fi Audio CBA) VR954 (SEP 3K) (Hi-Fi Audio CBA)	E-E	1kHz Mono 100%= 100mVrms (283mVp-p)
Tape	**Measurement Equipment**	Spec.	
—	Oscilloscope USA TV Multi Channel Sound Generator	—	

Connections of Measurement Equipment



Reference Notes:

1. Input 1kHz Mono 100%= 100mVrms to J11. Next set the sound generator to; Tone: 300Hz, Modulation: 20% (-13.9dB), Pilot: ON, NR: ON, PRE-EN: IN, L only mode.
2. Adjust VR955 so that the output level becomes minimum.
3. Select Tone: 3kHz signal and adjust VR954 so that the output from the Rch becomes minimum.
4. Repeat steps 2 to 3 several times to achieve the best results.

Notes:

1. Be sure to do the Stereo/SAP filter and VCO Adjustments before this adjustment.
2. After completion of these adjustment, reinstall C708.

8. Separation Adjustment (VT-FX600A / FX600AC / FX600C Models only)

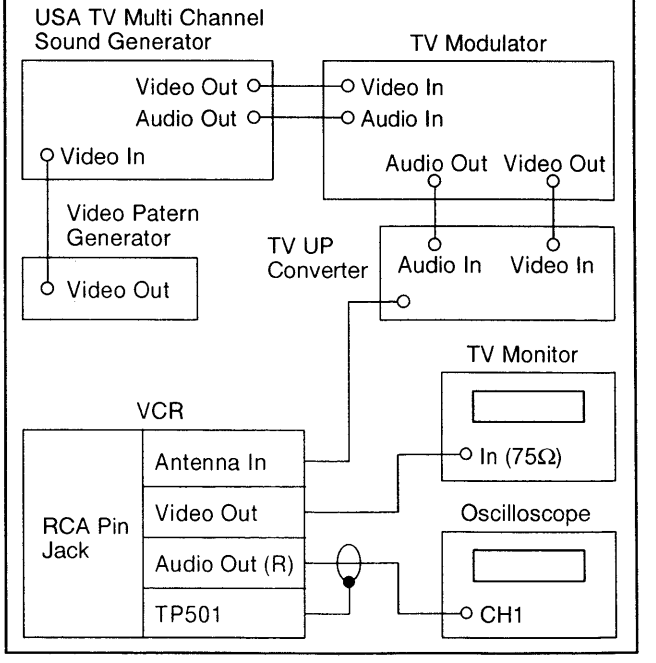
Caution: Do not attempt to do this adjustment without the equipment specified below.

Purpose: To set the audio output level of the tuner properly.

Symptom of Misadjustment: Audio signal of L ch and R ch may be mixed under E-E and/or REC mode.

Test Point	Adj. Point	Mode	Input
Antenna In Video Out Audio Out (R) TP501 (GND)	VR701 (SEP.) (MAIN CBA)	E-E	Color Bar with 100% White, 87.5% 300Hz, 3kHz Stereo(L ch Only)20%(-13.9dB)modulation
Tape	**Measurement Equipment**	Spec.	
—	TV Monitor Oscilloscope USA TV Multi Channel Sound Generator TV Modulator TV UpConverter Video Pattern Generator	—	

Connections of Measurement Equipment



Reference Notes:

1. Output the color bar with 100% white from the video pattern generator, then make 87.5% modulation by the TV modulator.
2. Output the 1kHz Mono 100% signal from the sound generator, then set 25kHz deviation exactly by the sound generator.
3. Set the sound generator to;

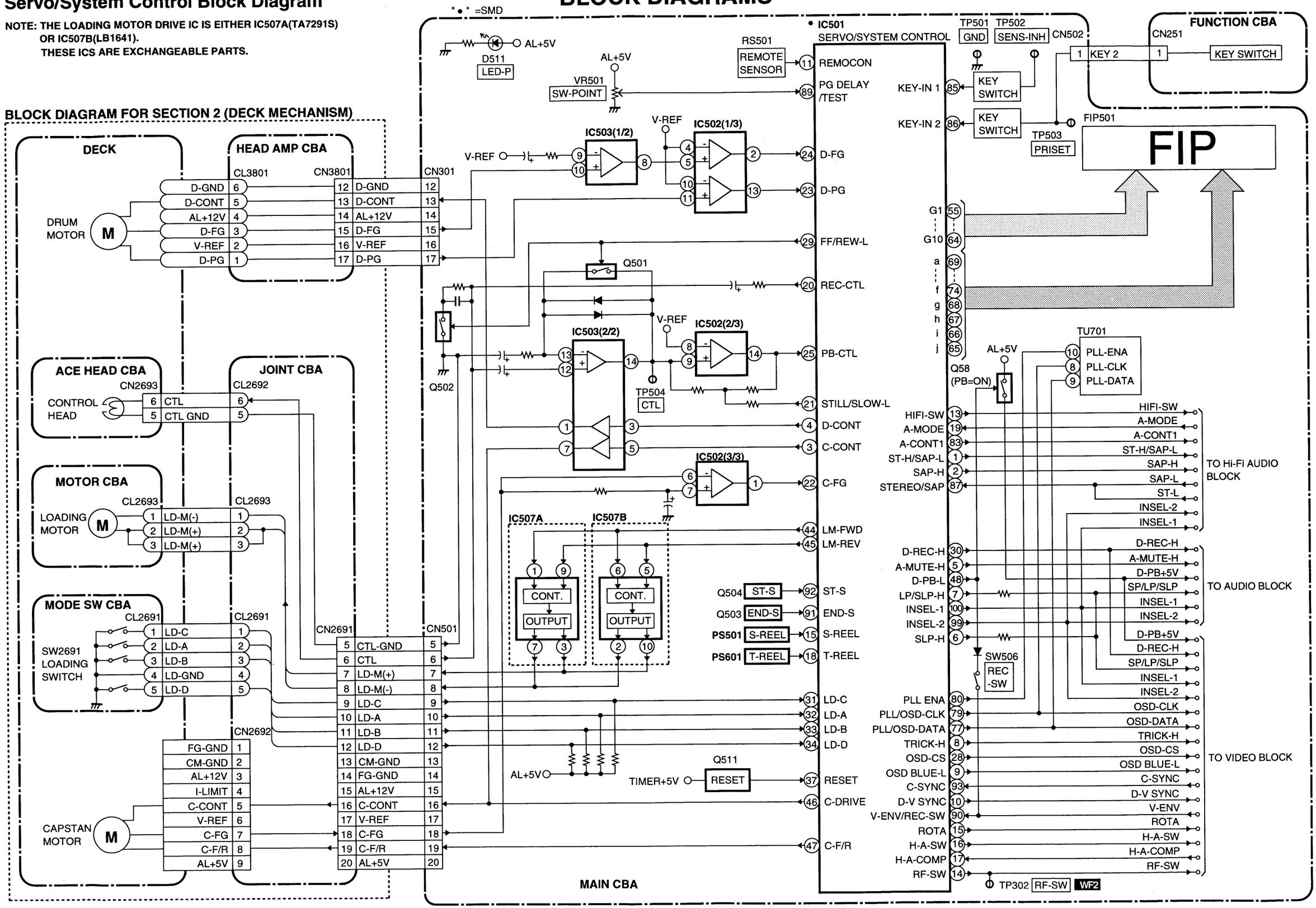
   Tone: 300Hz, Modulation: 20% (-13.9 dB), Pilot: ON, NR: IN, PRE-EN: IN, L only mode.
4. Set the TV up convertor to 70 dBμ, ch 10 (193.25kHz), then set the channel of the VCR to 10 ch.
5. Confirm the word "STEREO" appears on the TV monitor. Adjust VR701 to obtain minimum level of R ch.
6. Select tone: 3kHz signal then check if signal leakage of R ch is less than the leakage under Tone: 300Hz signal. If not adjust VR701.

BLOCK DIAGRAMS

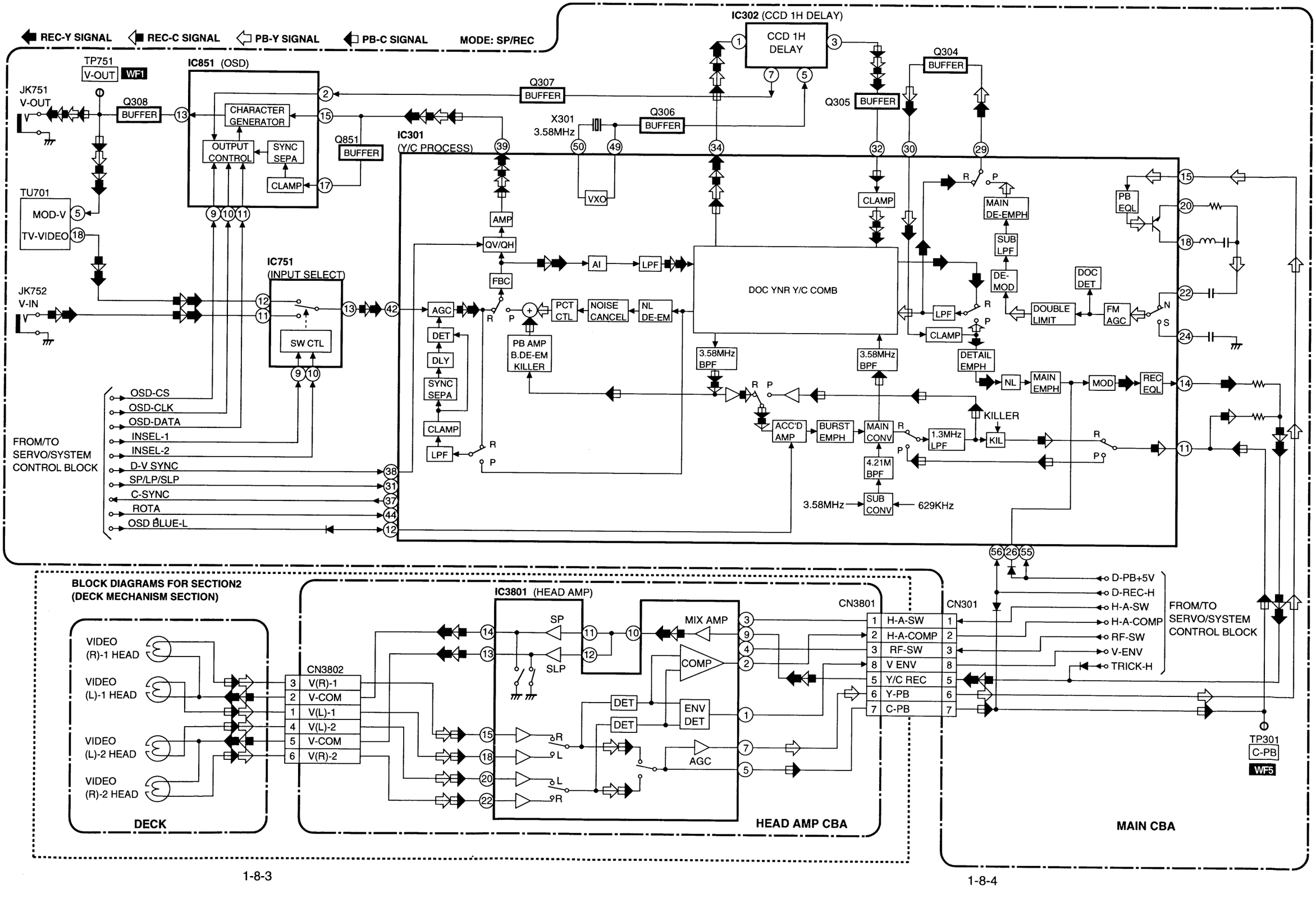
Servo/System Control Block Diagram

NOTE: THE LOADING MOTOR DRIVE IC IS EITHER IC507A(TA7291S) OR IC507B(LB1641).
THESE ICS ARE EXCHANGEABLE PARTS.

BLOCK DIAGRAM FOR SECTION 2 (DECK MECHANISM)



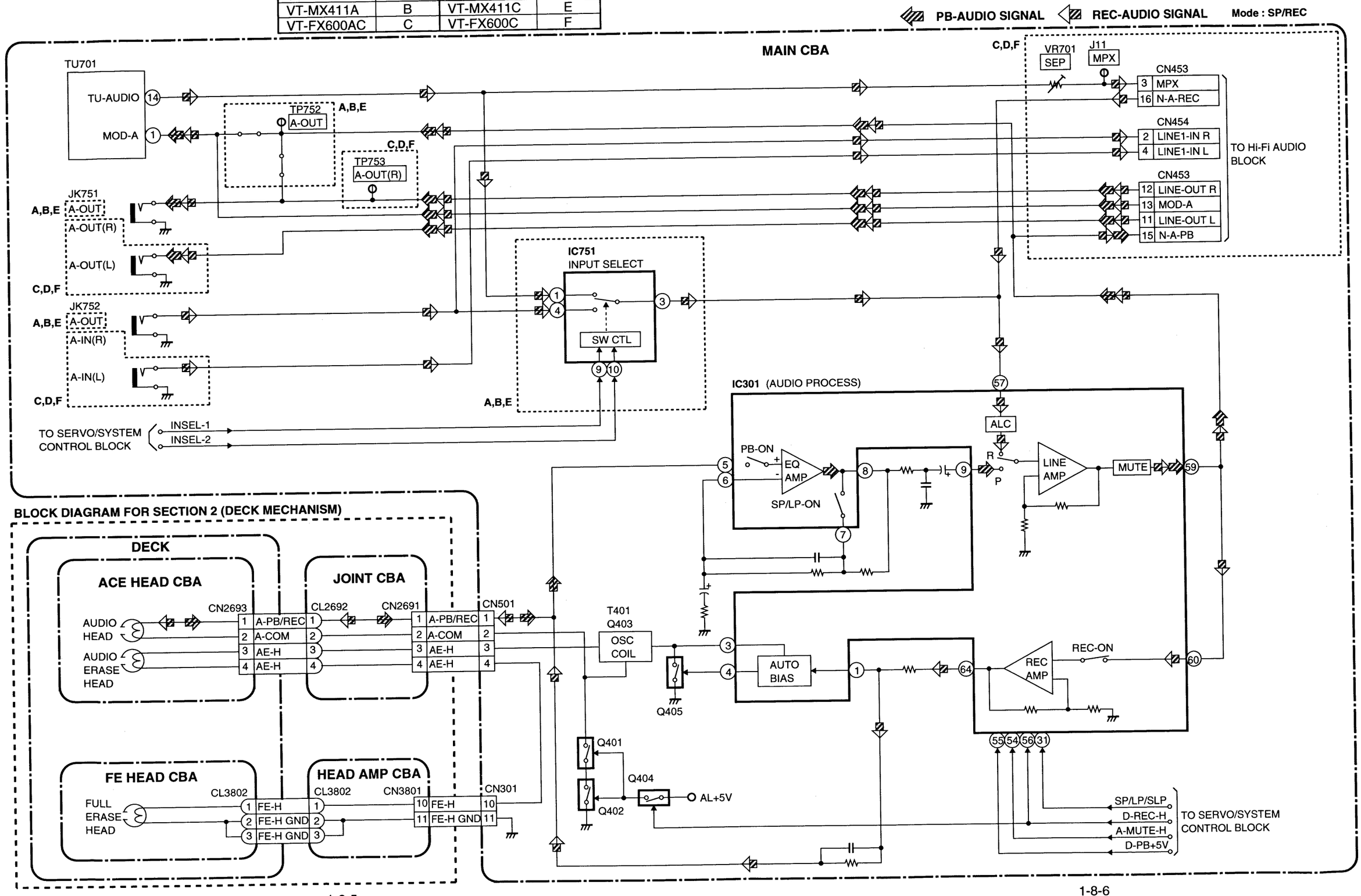
Video Block Diagram



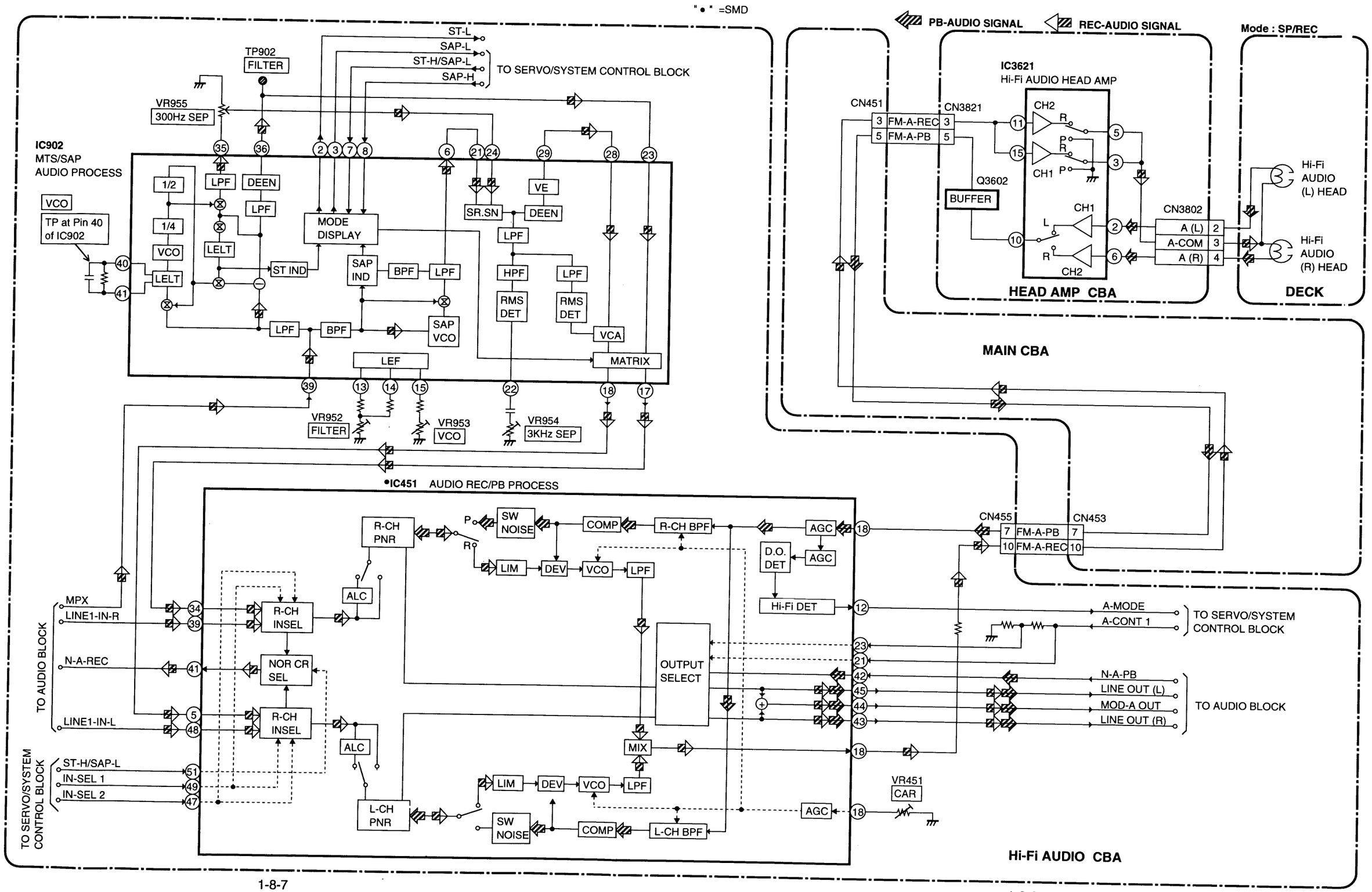
Audio Block Diagram

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
VT-MX411AC	A	VT-FX600A	D
VT-MX411A	B	VT-MX411C	E
VT-FX600AC	C	VT-FX600C	F



Hi-Fi Audio Block Diagram (VT-FX600A/FX600AC/FX600C Models only)



Power Supply Block Diagram

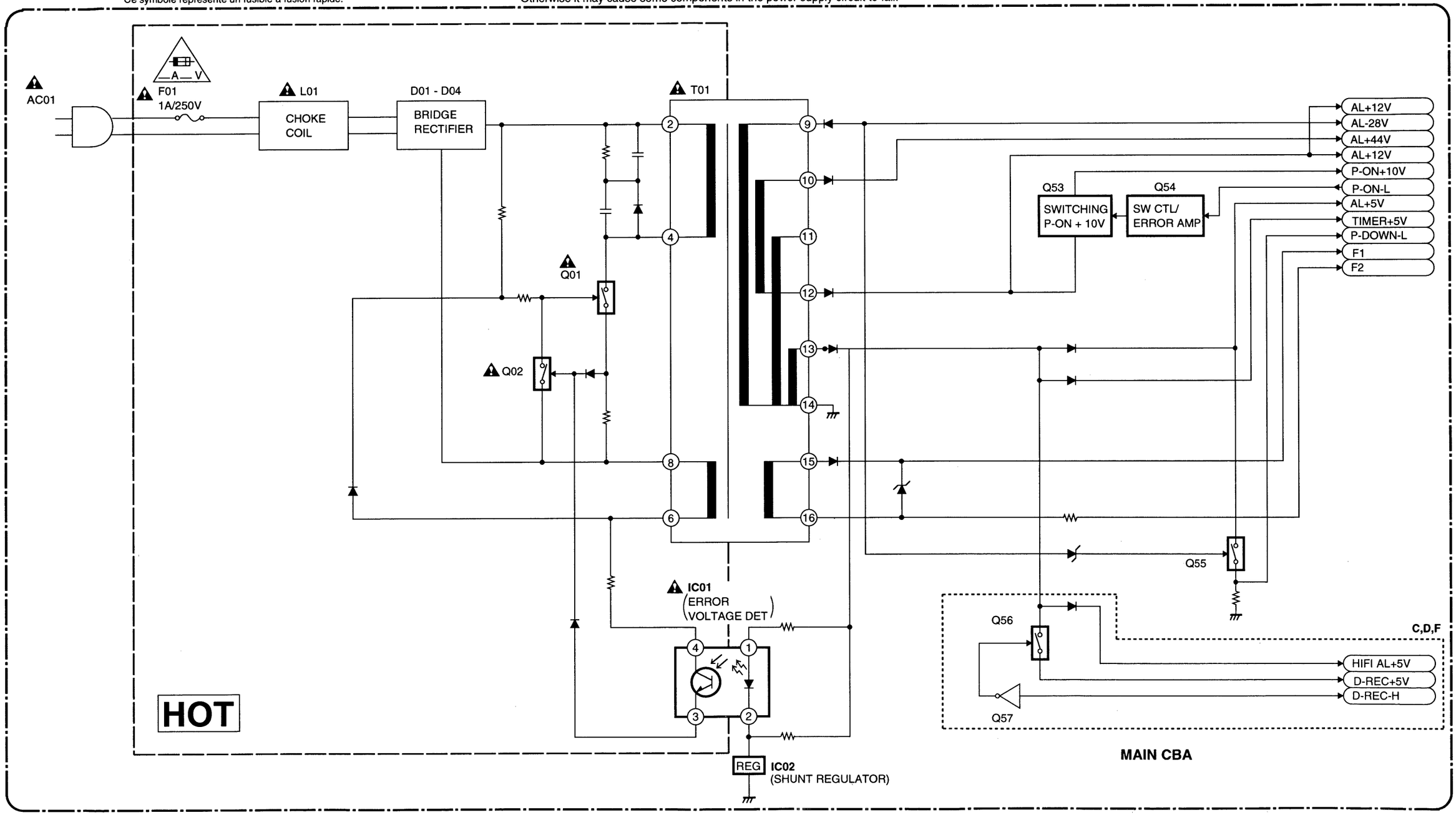
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole reprèsente un fusible à fusion rapide."

★ NOTE :
THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING
HOT GND AS A COMMON TERMINAL.

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F01) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
VT-MX411AC	A	VT-FX600A	D
VT-MX411A	B	VT-MX411C	E
VT-FX600AC	C	VT-FX600C	F



SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

WARNING

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark " ⚠ " in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 -80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	+30 -80%	20°C	-10~+70°C

Capacitors and transistors are represented by the following symbols.

CBA Symbols

(Top View) (Bottom View)

: : Electrolytic Capacitor

(Bottom View)

: Transistor or Digital Transistor

E C B

(Top View) NPN Transistor

E C B

(Top View) PNP Transistor

E C B

(Top View) NPN Digital Transistor

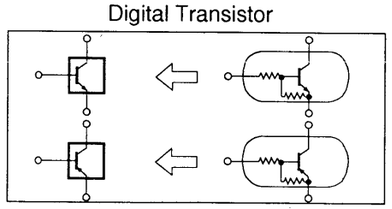
E C B

(Top View) PNP Digital Transistor

E C B

Schematic Diagram Symbols

Digital Transistor



Note:

1 Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.

2 All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).

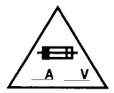
3 Resistor wattages are 1/4W or 1/6W unless otherwise specified.

4 All capacitance values are indicated in μF ($P=10^{-6}\mu F$).

5 All voltages are DC voltages unless otherwise specified.

LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. **CAUTION:**



FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.

This symbol means fast operating fuse.
Ce symbole représente un fusible à fusion rapide.

2. **CAUTION:**
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F01) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

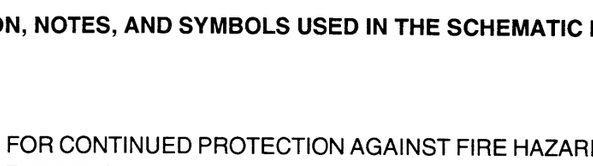
3. **Note:**
(1)Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
(2)To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Wire Connectors
(1)Prefix symbol "CN" means "connector." (Can disconnect and reconnect)
(2)Prefix symbol "CL" means "wire-solder holes of the PCB." (Wire is soldered directly.)

5. Note: Mark "•" is a leadless (chip) component.

6. Mode: SP/REC

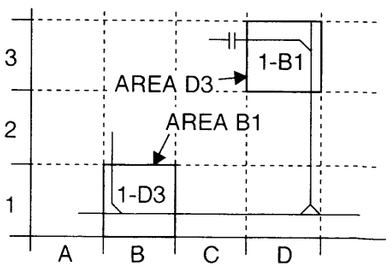
7. Voltage indications for PLAY and REC modes on the Schematics are as shown below:



Unit: Volts

8. How to read converged lines

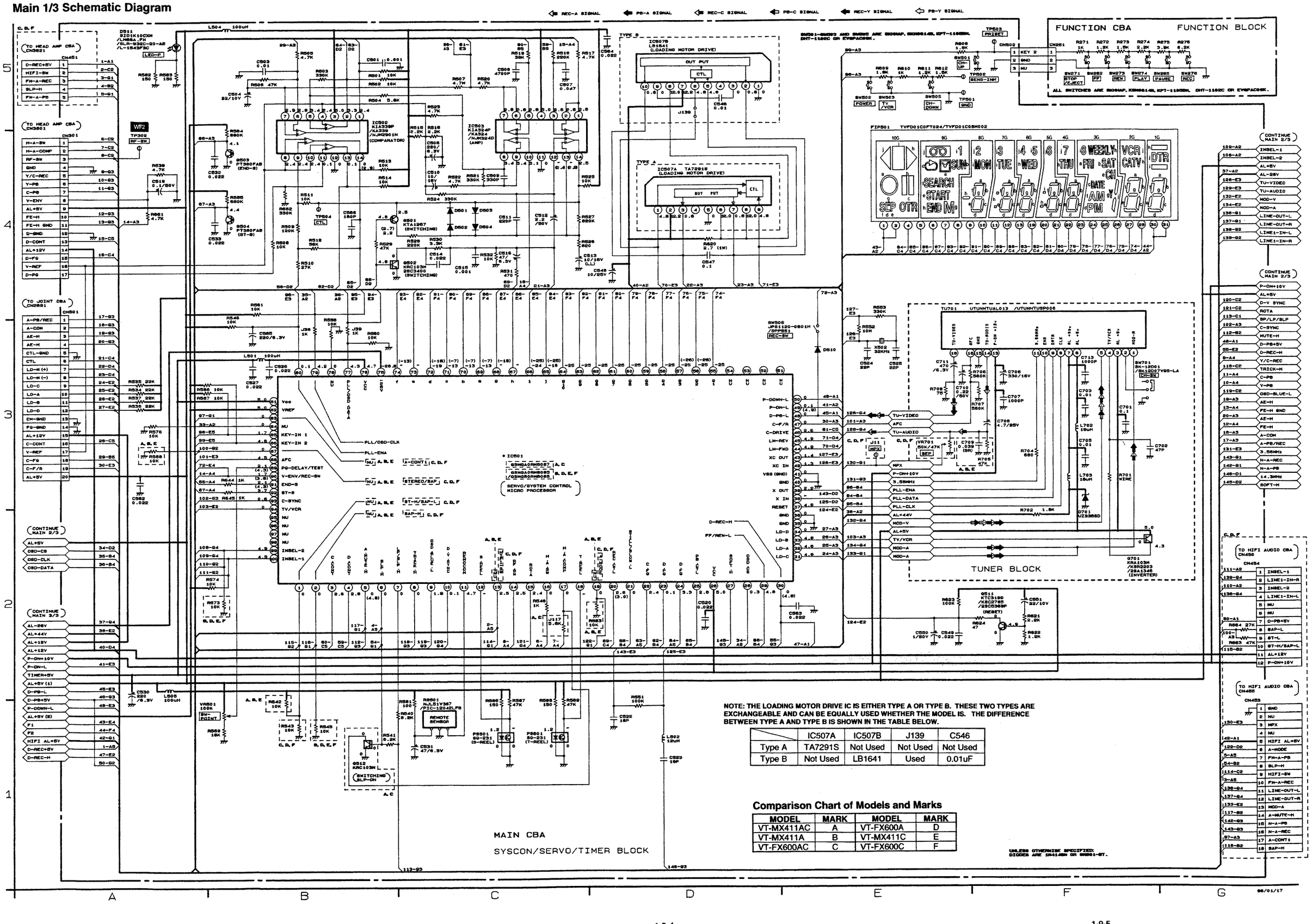
1-D3
Distinction Area
Line Number
(1 to 3 digits)
Examples:
1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".



9. Test Point Information

: Indicates a test point with a jumper wire across a hole in the PCB.
: Used to indicate a test point with a component lead on foil side.
: Used to indicate a test point with no test pin.
: Used to indicate a test point with a test pin.

Main 1/3 Schematic Diagram



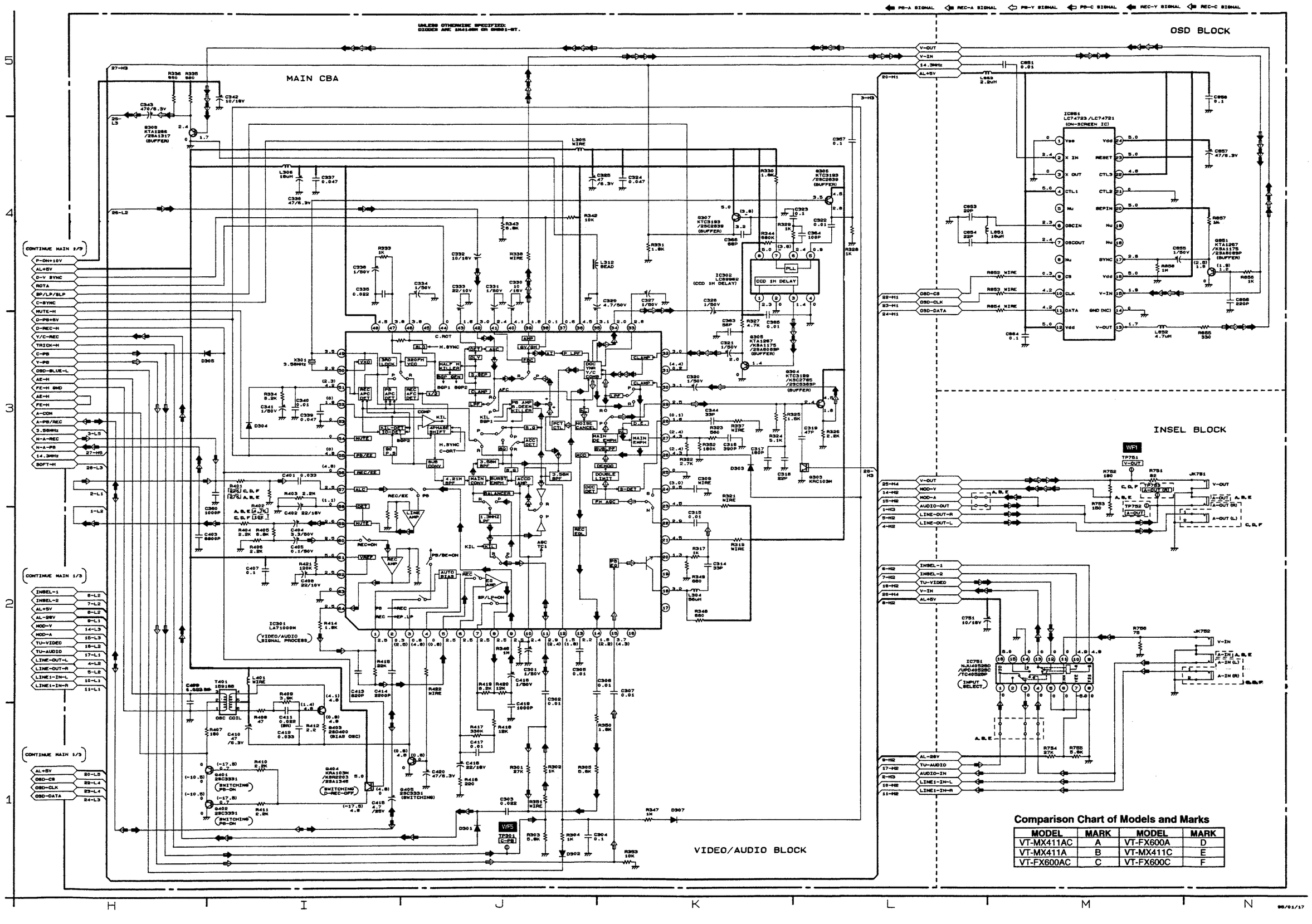
NOTE: THE LOADING MOTOR DRIVE IC IS EITHER TYPE A OR TYPE B. THESE TWO TYPES ARE EXCHANGEABLE AND CAN BE EQUALLY USED WHETHER THE MODEL IS. THE DIFFERENCE BETWEEN TYPE A AND TYPE B IS SHOWN IN THE TABLE BELOW.

	IC507A	IC507B	J139	C546
Type A	TA7291S	Not Used	Not Used	Not Used
Type B	Not Used	LB1641	Used	0.01uF

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
VT-MX411AC	A	VT-FX600A	D
VT-MX411A	B	VT-MX411C	E
VT-FX600AC	C	VT-FX600C	F

Main 2/3 Schematic Diagram



Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
VT-MX411AC	A	VT-FX600A	D
VT-MX411A	B	VT-MX411C	E
VT-FX600AC	C	VT-FX600C	F

Main 3/3 Schematic Diagram

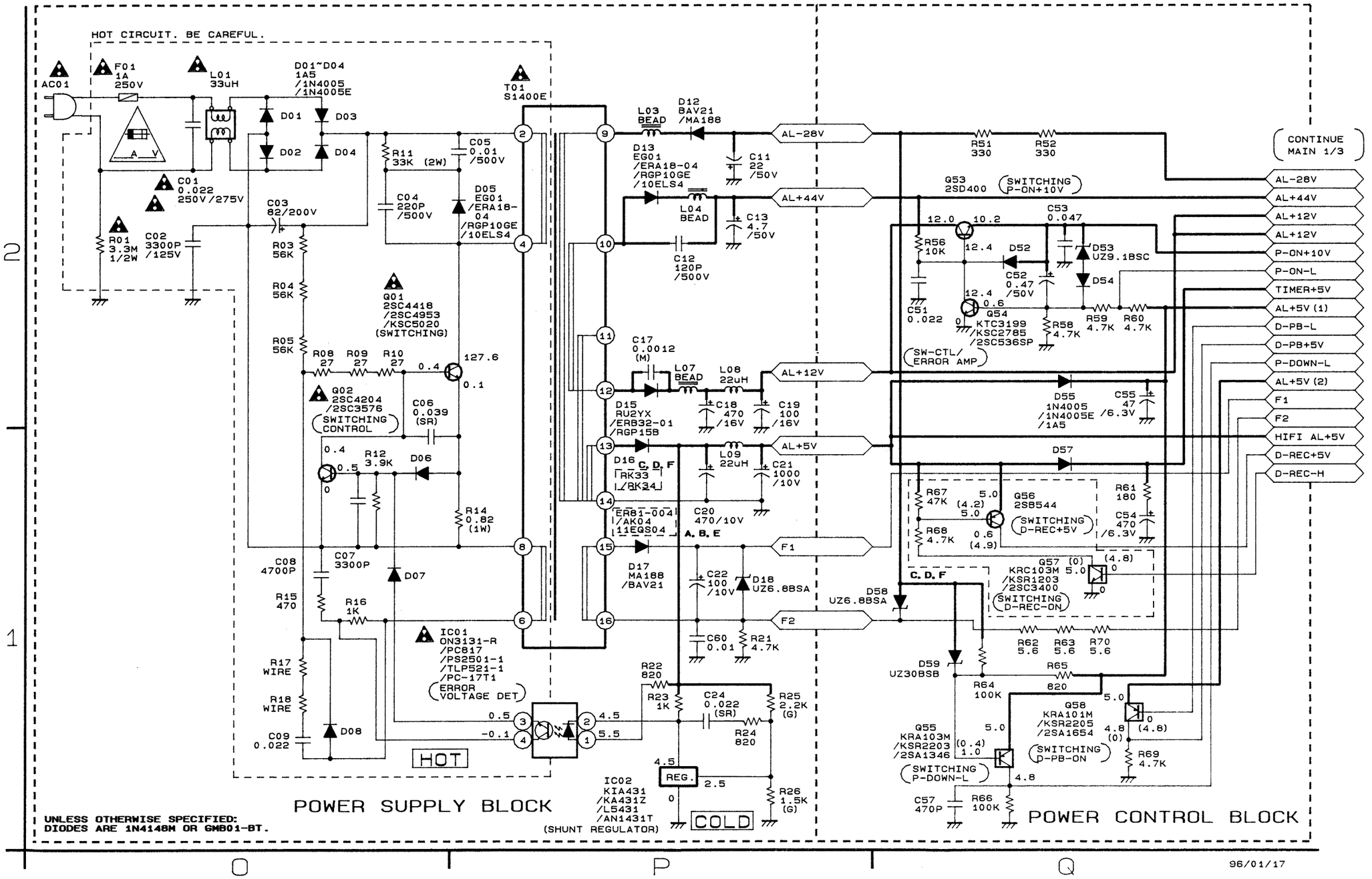
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole reprèsente un fusible à fusion rapide."

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F01) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

NOTE: THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
VT-MX411AC	A	VT-FX600A	D
VT-MX411A	B	VT-MX411C	E
VT-FX600AC	C	VT-FX600C	F



Head Amp/FE-Head Schematic Diagram

PB-A SIGNAL | REC-A SIGNAL | PB-Y SIGNAL | PB-C SIGNAL | REC-Y SIGNAL | REC-C SIGNAL | Mode : REC/SP

CN3801 (TO MAIN 1/3 CN301)
D-PG 17, V-REF 16, D-FG 15, AL+12V 14, D-CONT 13, D-GND 12, FE-H GND 11, FE-H 10, AL+5V 9, V-ENV 8, C-PB 7, Y-PB 6, Y/C-REC 5, GND 4, RF-SW 3, H-A-COMP 2, H-A-SW 1

CL3801 (TO DRUM MOTOR)
1 D-PG, 2 V-REF, 3 D-FG, 4 AL+12V, 5 D-CONT, 6 D-GND

C3813 0.047

CL3802
3 FE-H GND, 2 FE-H GND, 1 FE-H

CL3802 — FE-HEAD CBA — FULL ERASE HEAD

R3801 22K

L3801 22uH

C3802 0.22 /50V

R3803 47K

R3802 22K

C3801 0.001

C3814 0.022

HEAD AMP CBA

C,D,F

CN3821 (TO MAIN 1/3 CN451)
D-REC+5V 1, HI-FI-SW 2, FM-A-REC 3, SLP-H 4, FM-A-PB 5

R3829 1K, L3823 4.7uH

C3833 0.01

R3837 82K, R3834 1K

Q3821 KRA101M /KSR2205 /2SA1523 (SWITCHING PB-ON)

Q3822 2SC3330S /2SC3330T (BUFFER)

C3825 0.022, L3821 100uH, C3824 47/6.3V

Q3823 2SC3400 /KRC103M /KSR1203 (SWITCHING SLP-ON)

R3840 560, R3839 330, R3838 68K, R3835 2.2K, C3832 0.022

L3822 15uH

IC3821 TA7772P (Hi-Fi AUDIO HEAD AMP)

C3827 0.047, R3823 100, C3828 0.001

C3826 0.047

C3823 0.01

R3827 470, R3826 330, C3829 47 /6.3V, C3831 0.1

R3828 470

R3831 10K

C3830 0.01, R3832 330

C3821 0.047, R3821 100

PB Vcc, REC Vcc, CH2 REC AMP, CH2 PB-AMP, CH1 REC AMP, CH1 PB AMP

D3822 GMB01-BT /1N4148M

D3821 GMB01-BT /1N4148M

C3822 0.01

R3804 1K, C3803 0.01

R3805 1K, C3804 0.01

R3806 6.8K, R3807 6.8K, R3808 33K, C3805 0.01, R3809 33K, C3806 0.01

IC3801 LA7372 (VIDEO HEAD AMP)

HA, ENV DET, COMP, SLP, SP, MUTE ON OFF, SW30, AGC, AGC DET, MIX AMP, DET, VCC, SW7, SW5, SW3, SW4, SW6, SW8, A1, A2, PRE GND, SP, SLP, SW1, SW2

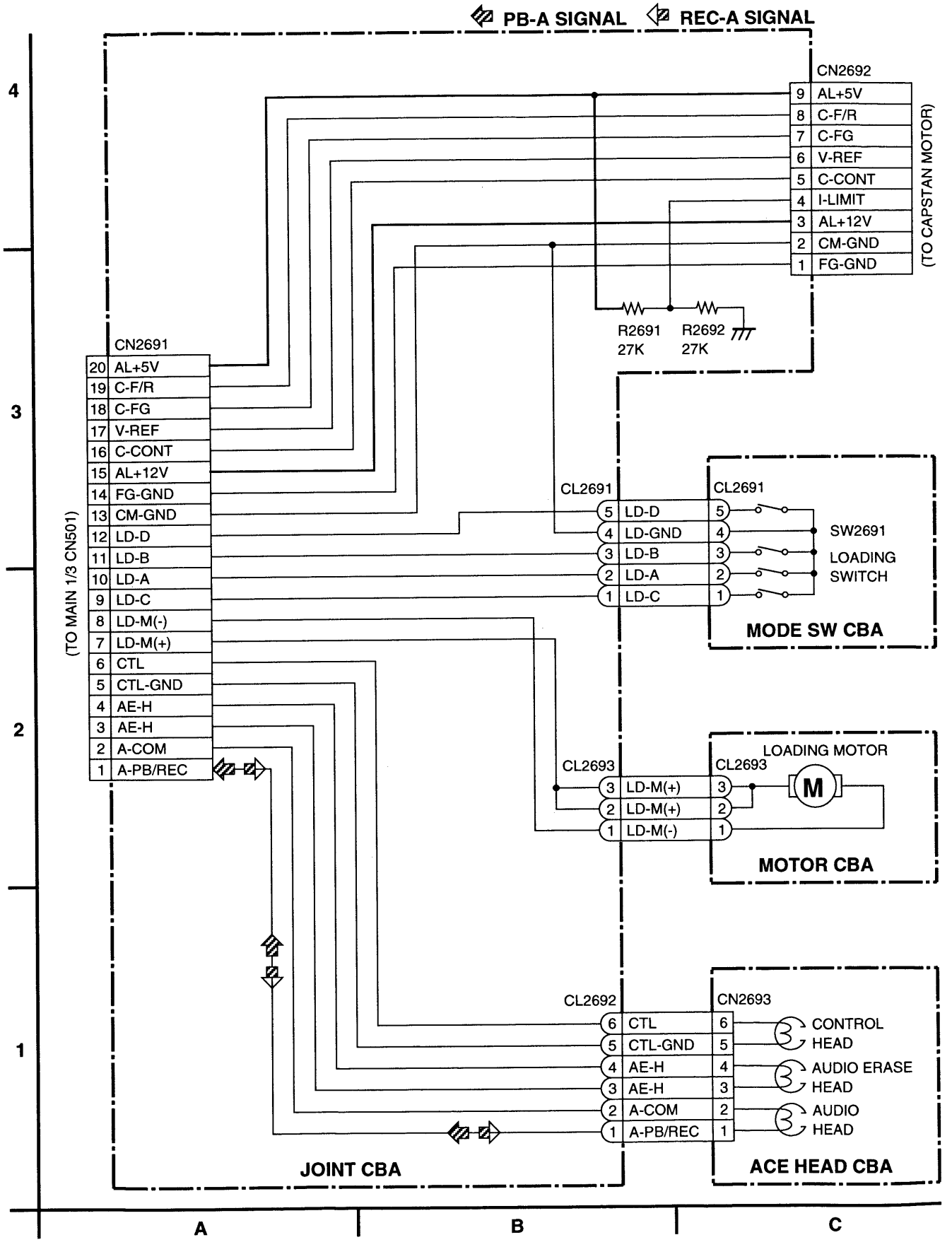
C3810 0.1, C3809 0.1, C3808 0.1, C3807 0.1

C3812 220 /6.3V, C3811 0.1

C,D,F / A,B,E

CN3802 (TO VIDEO/Hi-Fi AUDIO HEAD)
7 11 GND, 6 10 V(R)-2, 5 9 V-COM, 4 8 V(L)-2, 3 7 V(R)-1, 2 6 V-COM, 1 5 V(L)-1, 4 A(R), 3 A-COM, 2 A(L), 1 NC

Joint/Mode Sw/Ace Head/Motor Schematic Diagram



Hi-Fi Audio Schematic Diagram (VT-FX600A/FX600AC/FX600C Models only)

PB-A SIGNAL REC-A SIGNAL

MTS BLOCK

Hi-Fi BLOCK

TU-L
TU-R
ST-H/SAP-L
P-ON+10V
SAP-L
ST-L
MPX
SAP-H

TO MAIN 1/3 CN454

CN456

12	P-ON+10V
11	AL+12V
10	ST-H/SAP-L
9	ST-L
8	SAP-L
7	D-PB+5V
6	NU
5	NU
4	LINE1-IN-L
3	INSEL-2
2	LINE1-IN-R
1	INSEL-1

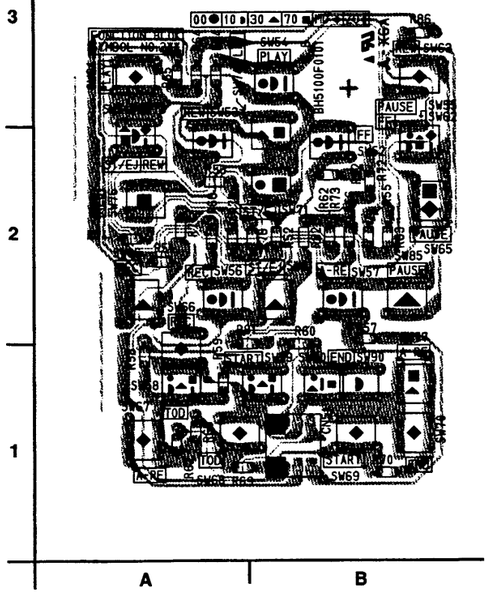
TO MAIN 1/3 CN453

CN455

18	SAP-H
17	A-CONT 1
16	H-A-REC
15	H-A-PB
14	A-MUTE-H
13	MOD-A
12	LINE-OUT-R
11	LINE-OUT-L
10	FM-A-REC
9	HIFI-SW
8	SLP-H
7	FM-A-PB
6	A-MODE
5	HIFI AL+5V
4	NU
3	MPX
2	NU
1	GND

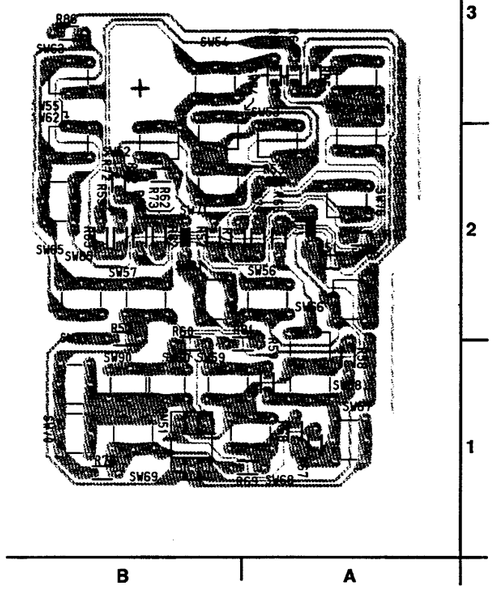
98/01/17

Function CBA Top View

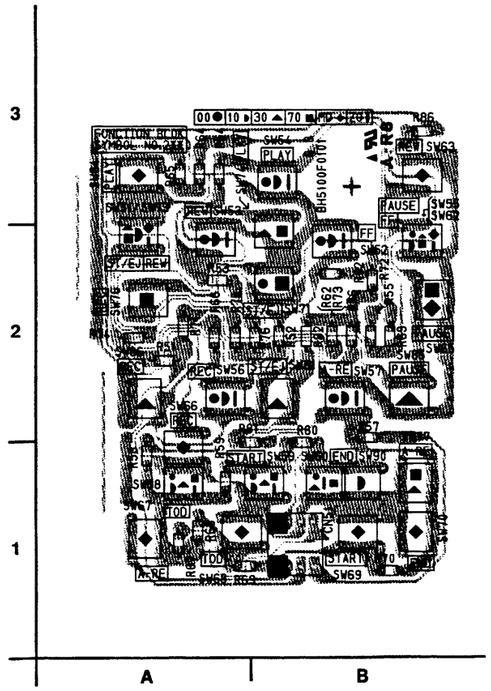


Note: The models covered by this manual employ two exchangeable Function CBAs which have the same parts but have patterns that are slightly different. (One of these two CBAs was provided to improve the production efficiency.) These CBAs can be identified by their CBA numbers that are screened on the lower left-hand corner of the top side. This number reads BH5100F0101 on the bottom line. Screened on top of this line is 5B or 6B, the last segment of the CBA number. When servicing, confirm this number of your unit to see which CBA you should refer to, BH5100F01015B below on these pages or BH5100F01016B following.

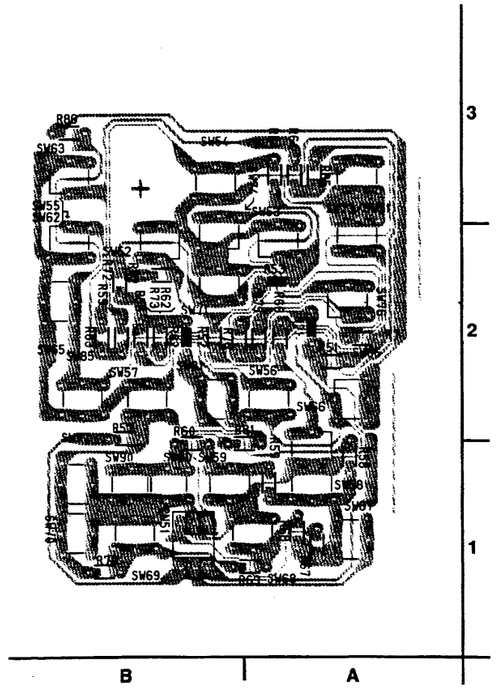
Function CBA Bottom View



Function CBA Top View



Function CBA Bottom View



Main CBA Top View

Note: The models covered by this manual employ two exchangeable Main CBAs which have the same parts but have patterns that are slightly different. (One of these two CBAs was provided to improve the production efficiency.) These CBAs can be identified by their CBA numbers that are screened on the lower left-hand corner of the top side. This number reads BH5100F0101 on the bottom line. Screened on top of this line is 5A or 6A, the last segment of the CBA number. When servicing, confirm this number of your unit to see which CBA you should refer to, BH5100F01015A below on these pages or BH5100F01016A following.

Note: The loading motor drive IC is either type A or type B. These two types are exchangeable and can be equally used whichever the model is. The difference between type A and type B is shown in the table below.

	IC507A	IC507B	J139	C546
Type A	TA7291S	Not Used	Not Used	Not Used
Type B	Not Used	LB1641	Used	0.01uF

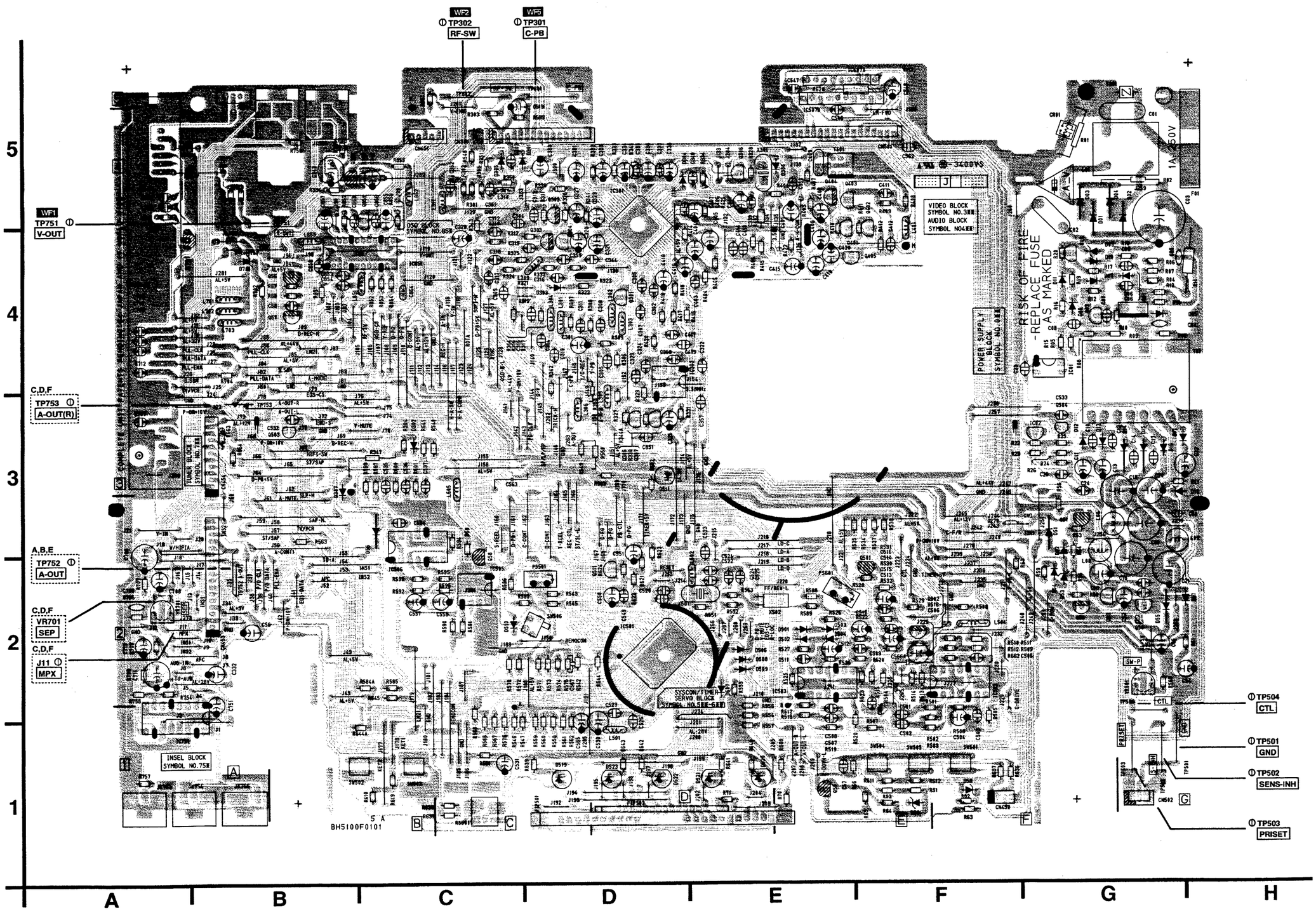
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F01) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

NOTE: THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
VT-MX411AC	A	VT-FX600A	D
VT-MX411A	B	VT-MX411C	E
VT-FX600AC	C	VT-FX600C	F



Main CBA Bottom View

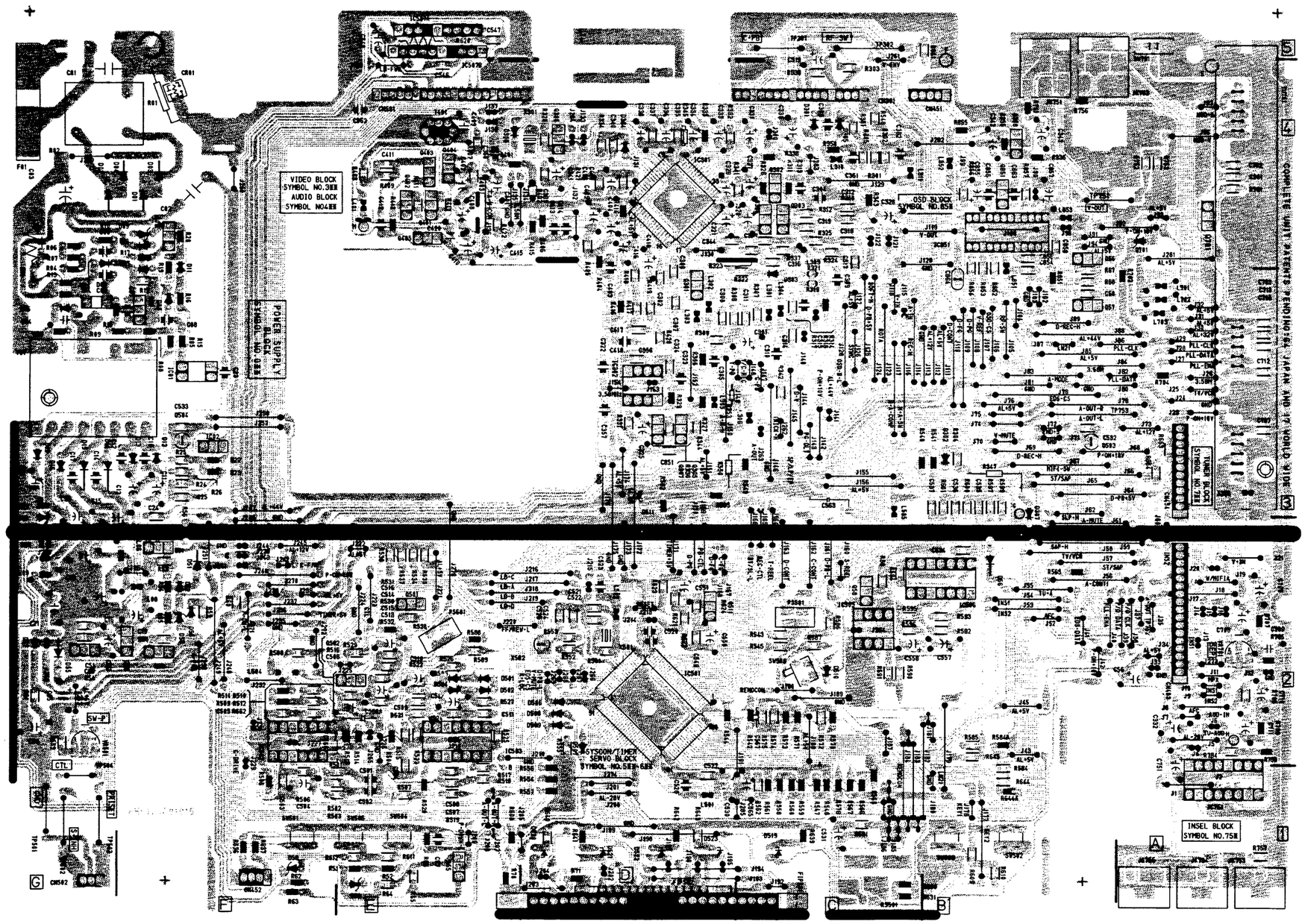
Note: The loading motor drive IC is either type A or type B. These two types are exchangeable and can be equally used whichever the model is. The difference between type A and type B is shown in the table below.

	IC507A	IC507B	J139	C546
Type A	TA7291S	Not Used	Not Used	Not Used
Type B	Not Used	LB1641	Used	0.01uF

NOTE: THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F01) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.


VIDEO BLOCK
SYMBOL NO.38
AUDIO BLOCK
SYMBOL NO.48
POWER SUPPLY BLOCK SYMBOL NO.88
SYSCON/TIMER SERVO BLOCK SYMBOL NO.58
OSD BLOCK SYMBOL NO.85
INSEL BLOCK SYMBOL NO.75
COMPLETE UNIT PATENTS PENDING IN U.S.A. AND JAPAN AND OTHER WORLD WIDE

H G F E D C B A

Main CBA Top View

Note: The models covered by this manual employ two exchangeable Main CBAs which have the same parts but have patterns that are slightly different. (One of these two CBAs was provided to improve the production efficiency.) These CBAs can be identified by their CBA numbers that are screened on the lower left-hand corner of the top side. This number reads BH5100F0101 on the bottom line. Screened on top of this line is 5A or 6A, the last segment of the CBA number. When servicing, confirm this number of your unit to see which CBA you should refer to, BH5100F01016A below on these pages or BH5100F01015A preceding.

Note: The loading motor drive IC is either type A or type B. These two types are exchangeable and can be equally used whichever the model is. The difference between type A and type B is shown in the table below.

	IC507A	IC507B	J139	C546
Type A	TA7291S	Not Used	Not Used	Not Used
Type B	Not Used	LB1641	Used	0.01uF

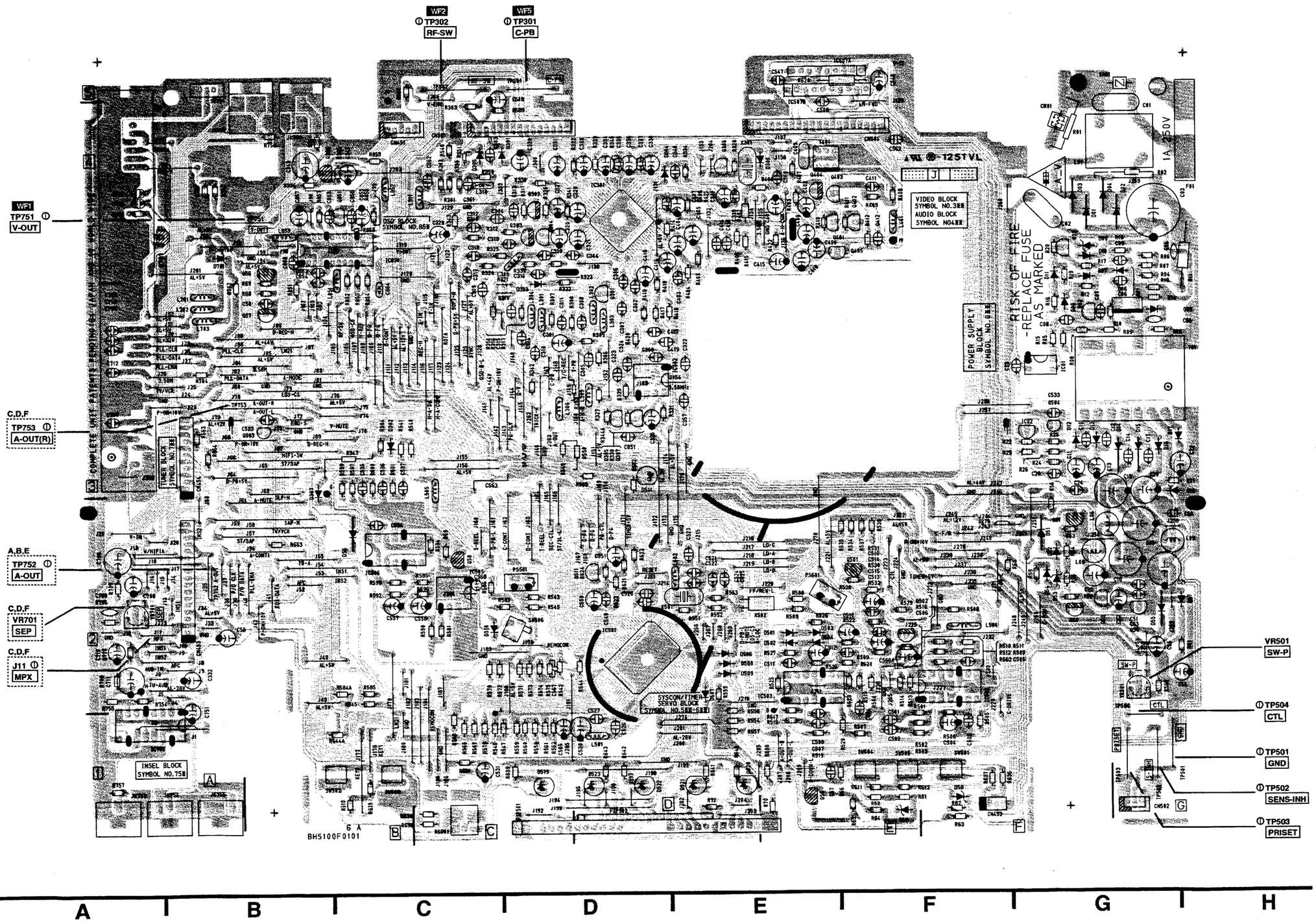
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F01) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

NOTE: THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
VT-MX411AC	A	VT-FX600A	D
VT-MX411A	B	VT-MX411C	E
VT-FX600AC	C	VT-FX600C	F



Main CBA Bottom View

Note: The loading motor drive IC is either type A or type B. These two types are exchangeable and can be equally used whichever the model is. The difference between type A and type B is shown in the table below.

	IC507A	IC507B	J139	C546
Type A	TA7291S	Not Used	Not Used	Not Used
Type B	Not Used	LB1641	Used	0.01uF

NOTE: THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

CAUTION
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ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
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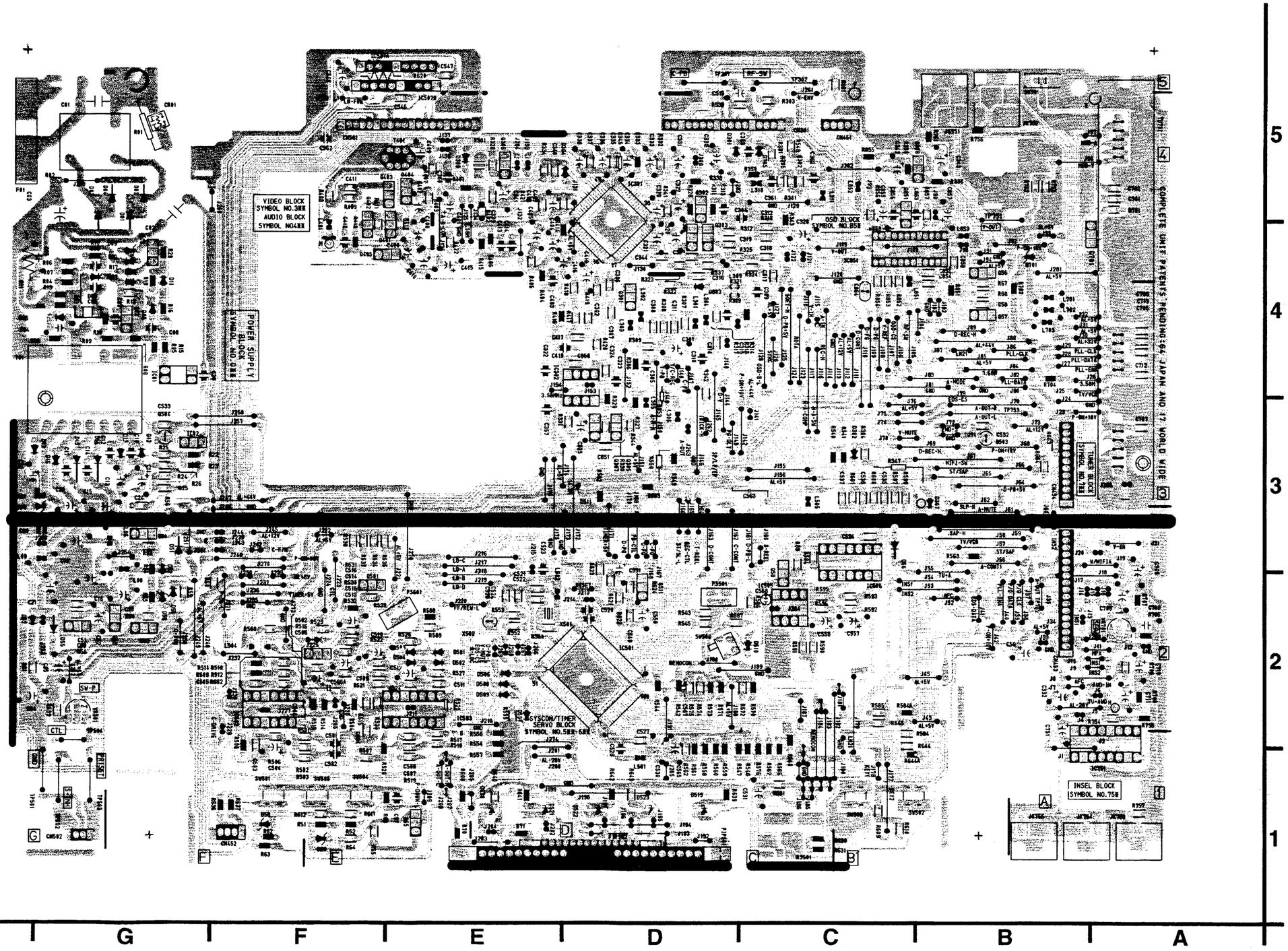
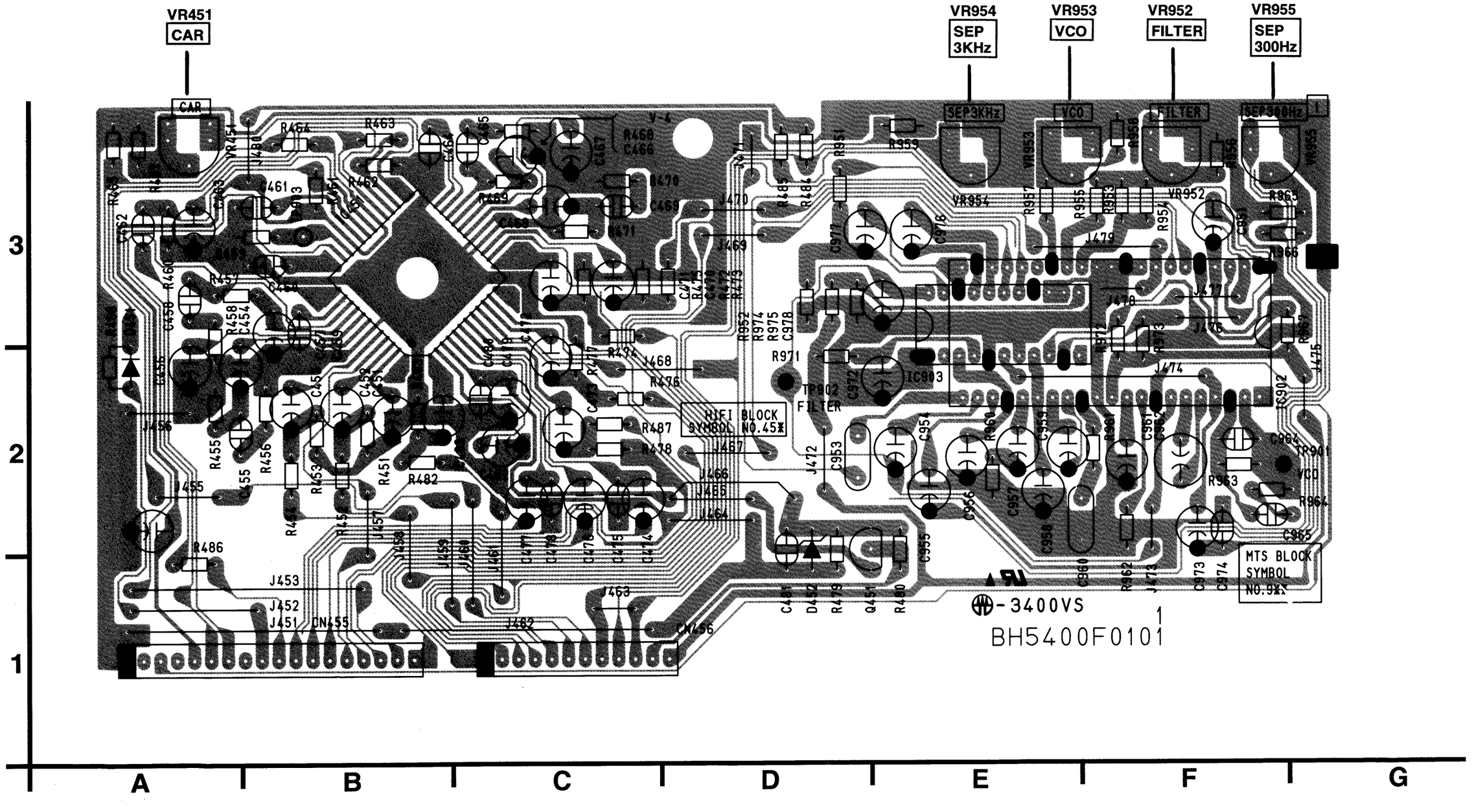
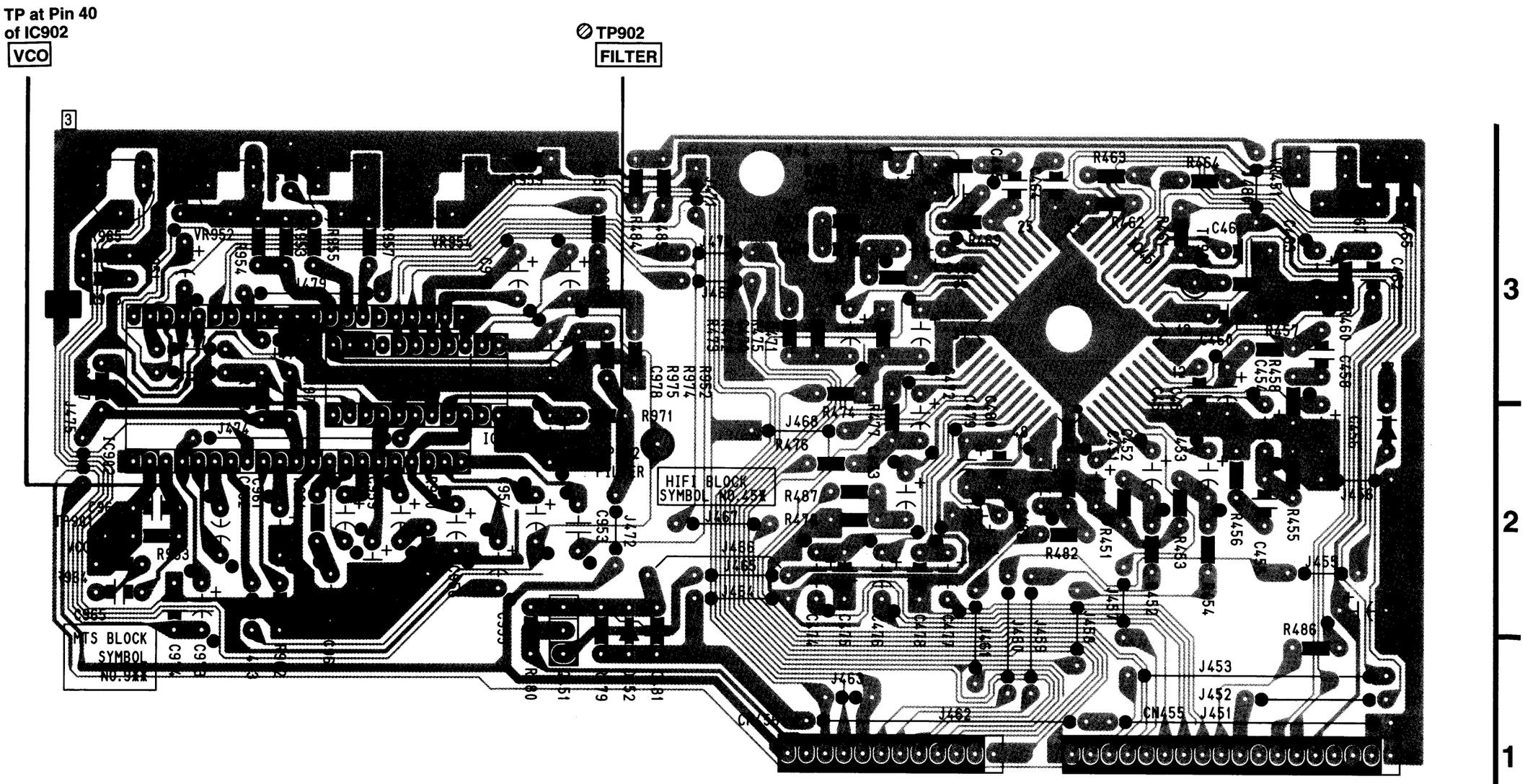
CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F01) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.



Hi-Fi Audio CBA Top View (VT-FX600A/FX600AC/FX600C Models only)

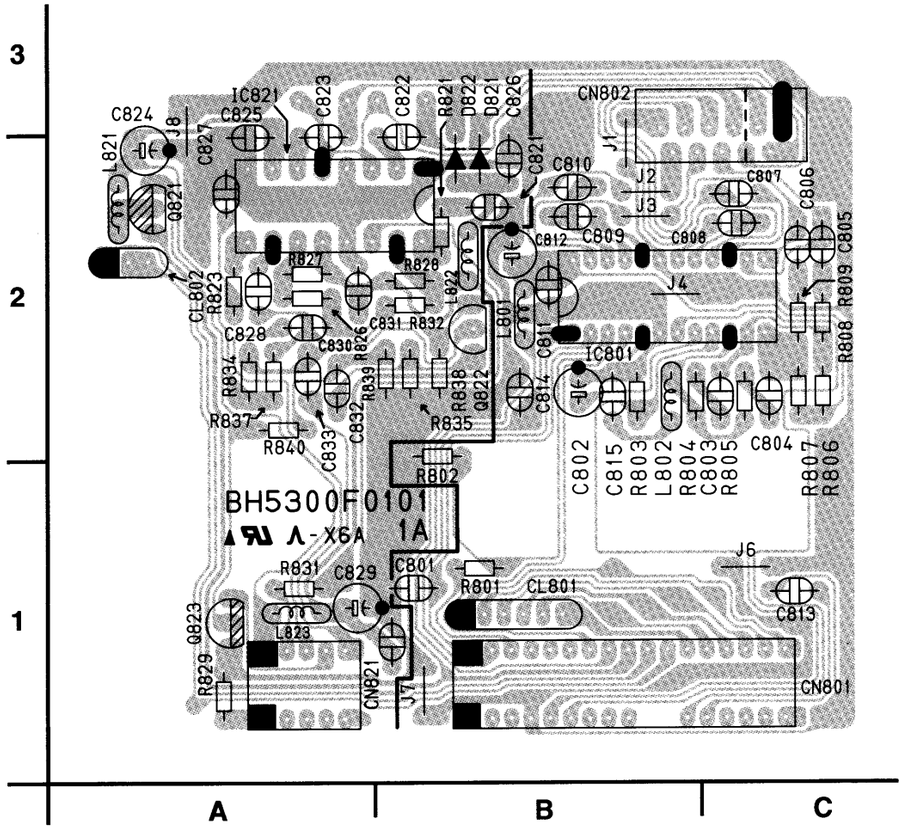


Hi-Fi Audio CBA Bottom View (VT-FX600A/FX600AC/FX600C Models only)

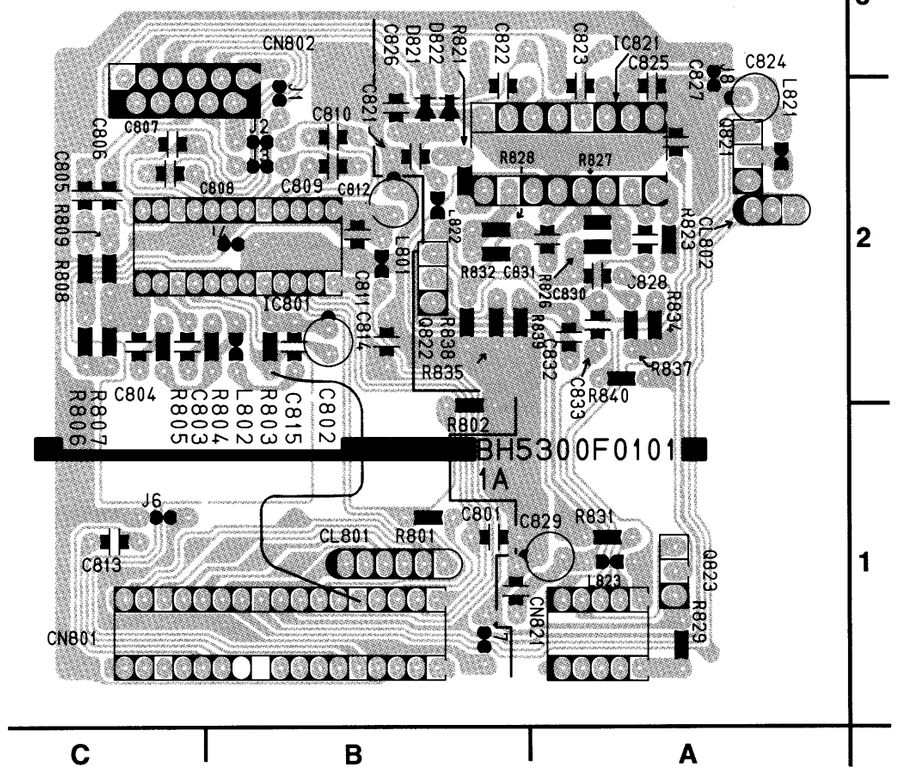


Head Amp CBA Top View

Note: The digit "3" is abbreviated in a reference number screened on CBA.
For example, CL802 on CBA is in fact CL3802.



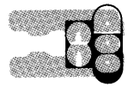
Head Amp CBA Bottom View



Note: There are two types of FE head CBAs and three types of FE heads. Combinations are made clear in Deck electrical parts list. As long as the combination is correct, all the three types of FE heads are interchangeable and can be equally used whichever the model may be. The digit "3" is abbreviated in a reference number screened on CBAs. For example, CL802 on CBA is in fact CL3802.

FE Head CBA Top View (TYPE B)

FE Head CBA Bottom View (TYPE B)

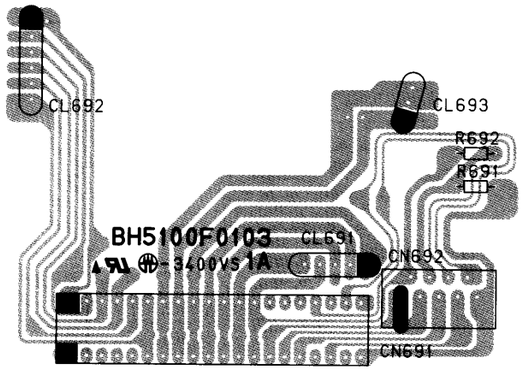


FE Head CBA Top View (TYPE C)

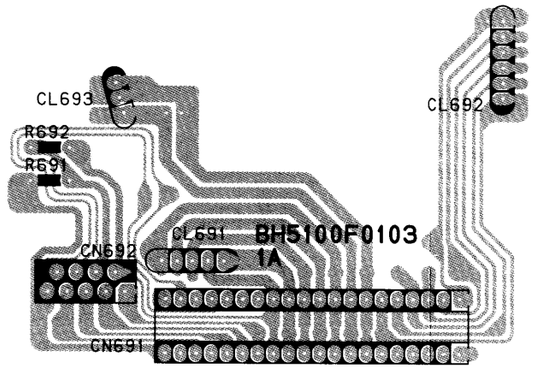
FE Head CBA Bottom View (TYPE C)

Note: The digit "2" is abbreviated in a reference number screened on CBAs listed below. For example, CL692 on CBA is in fact CL2692.

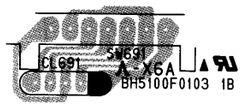
Joint CBA Top View



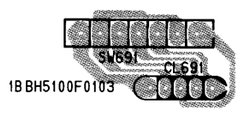
Joint CBA Bottom View



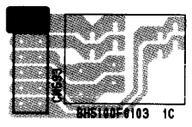
Mode Sw CBA Top View



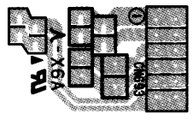
Mode Sw CBA Bottom View



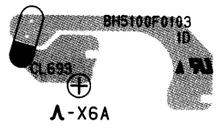
Ace Head CBA Top View



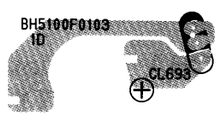
Ace Head CBA Bottom View



Motor CBA Top View

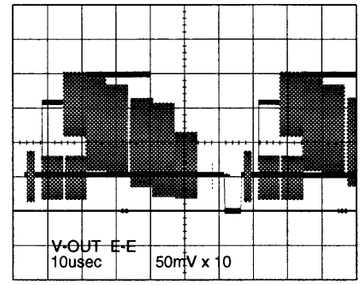


Motor CBA Bottom View

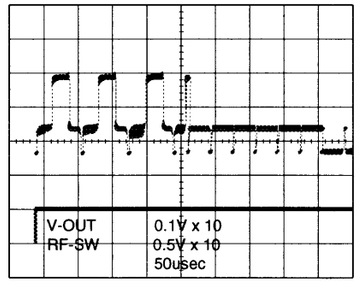


WAVEFORMS

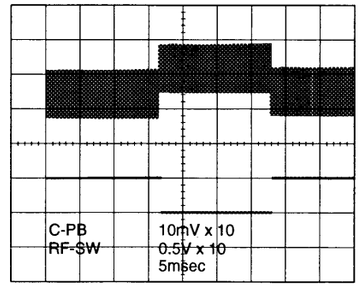
WF 1 (TP751 of Main CBA)



WF1 UPPER (TP751 of Main CBA)
WF2 LOWER (TP302 of Main CBA)



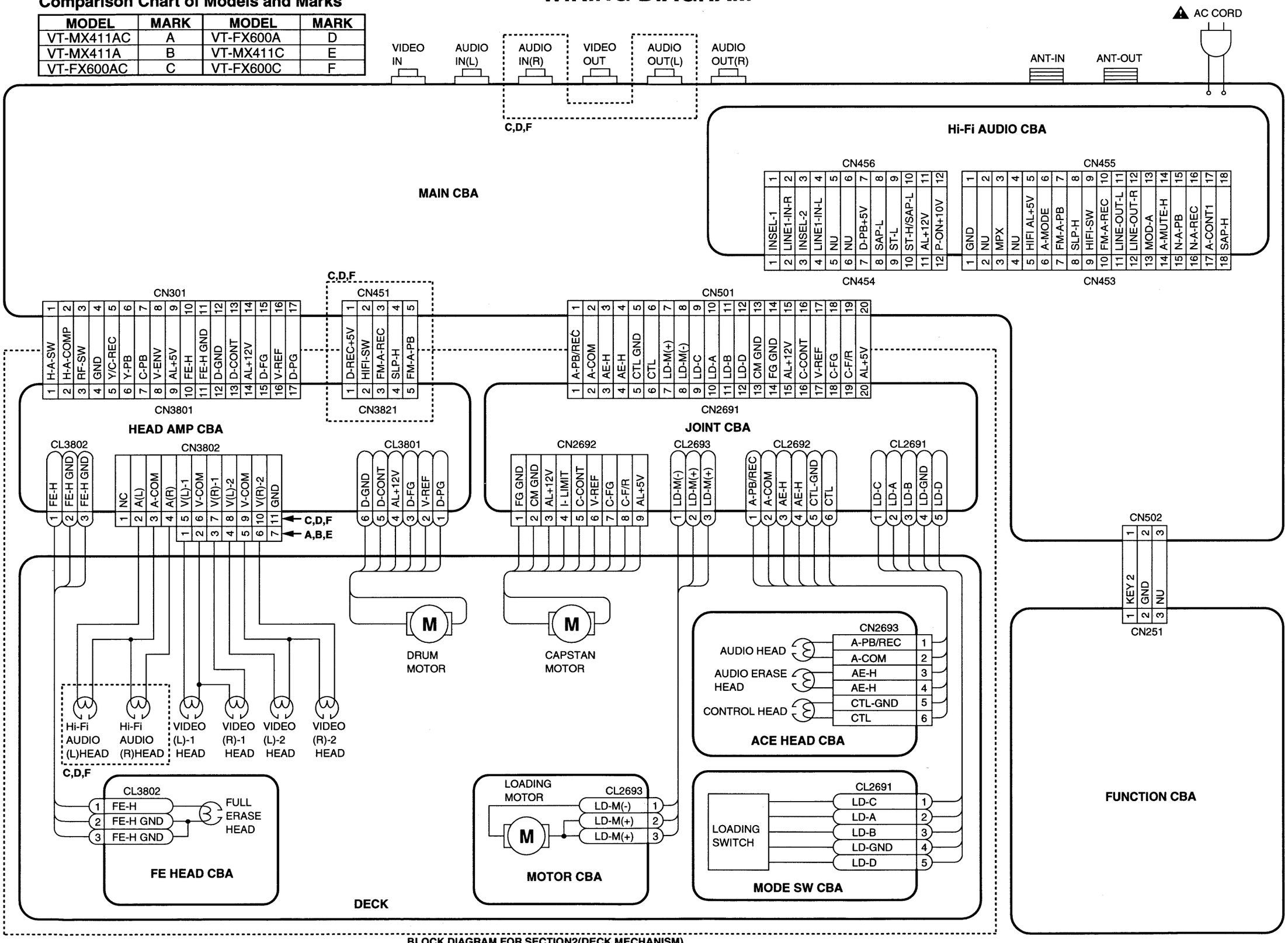
WF5 UPPER (TP301 of Main CBA)
WF2 LOWER (TP302 of Main CBA)



WIRING DIAGRAM

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
VT-MX411AC	A	VT-FX600A	D
VT-MX411A	B	VT-MX411C	E
VT-FX600AC	C	VT-FX600C	F



BLOCK DIAGRAM FOR SECTION2(DECK MECHANISM)

SYSTEM CONTROL TIMING CHARTS

Mode SW : LD-A/LD-B/LD-C/LD-D

LD-SW				Symbol	
LD-A	LD-B	LD-C	LD-D		
L	H	H	H	EJ	Eject
H	H	H	H	CL	REW Reel
L	L	H	H	SB	Stop (B)
H	L	H	H	TL	Brake Cancel
H	L	L	H	FB	
H	H	L	H	SF	FF / REW, Stop (A)
H	H	L	L	AU	
H	H	H	L	AL	Play / REC (FS Pause 2 Head Still)
H	L	H	L	SS	4 Head Slow / Still
H	H	H	H	GC	Capstan Reversal
L	H	H	L	RS	RS (REV Reel)

Note:

EJ —— RS : Loading FWD (LM-FWD "H", LM-REV "L")

RS —— EJ : Loading REV (LM-FWD "L", LM-REV "H")

Stop (A) = Loading

Stop (B) = Unloading

Note :

Symbol	Loading Status
EJ	Eject
CL	Eject ~ Loading Completion
SB	REW ~ Stop(B)
TL	Stop(B) ~ Brake Cancel
FB	Brake Cancel ~ FF / REW
SF	FF / REW ~ Stop(A)
AU	Stop(A) ~ Play / REC
AL	Play / REC ~ 4 Head Still / Slow
SS	4 Head Still / Slow ~ Capstan Reversal
GC	Capstan Reversal ~ REV Reel
RS	Rewind Search

Loading Motor/Control

LM-FWD	LM-REV	Description
H	H	Stop
H	L	Loading Forward Rotation
L	H	Loading Reverse Rotation

Capstan Motor/Control

C-DRIVE	C-F/R	Description
L	L/H	Stop, The brake is not applied.
H/Hi-Z	L	Capstan, Reel Forward Rotation
H/Hi-Z	H	Capstan, Reel Reverse Rotation

Still/Slow Control

Frame Advance Timing Chart

1) SP MODE

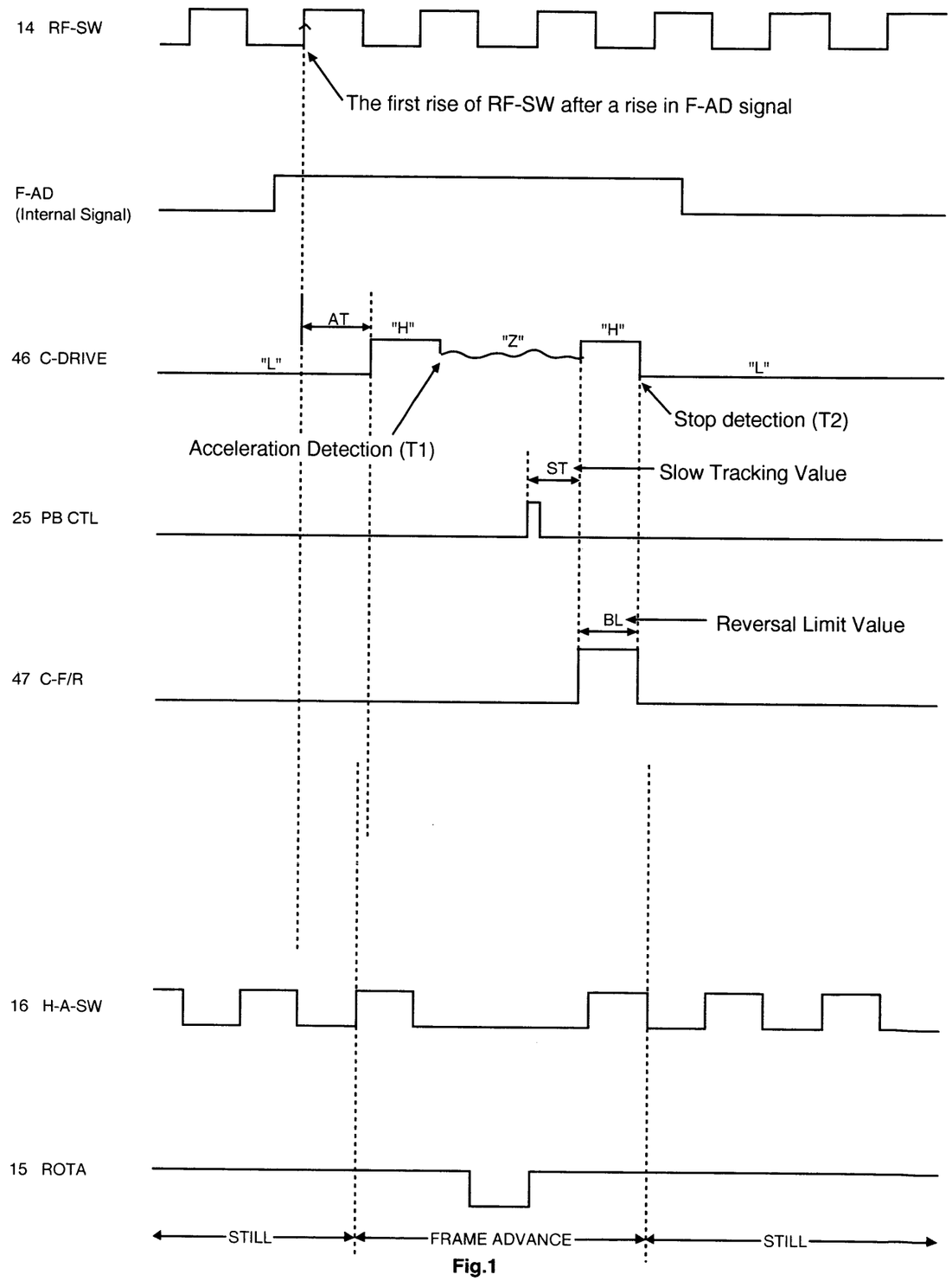


Fig.1

2) LP/SLP MODE

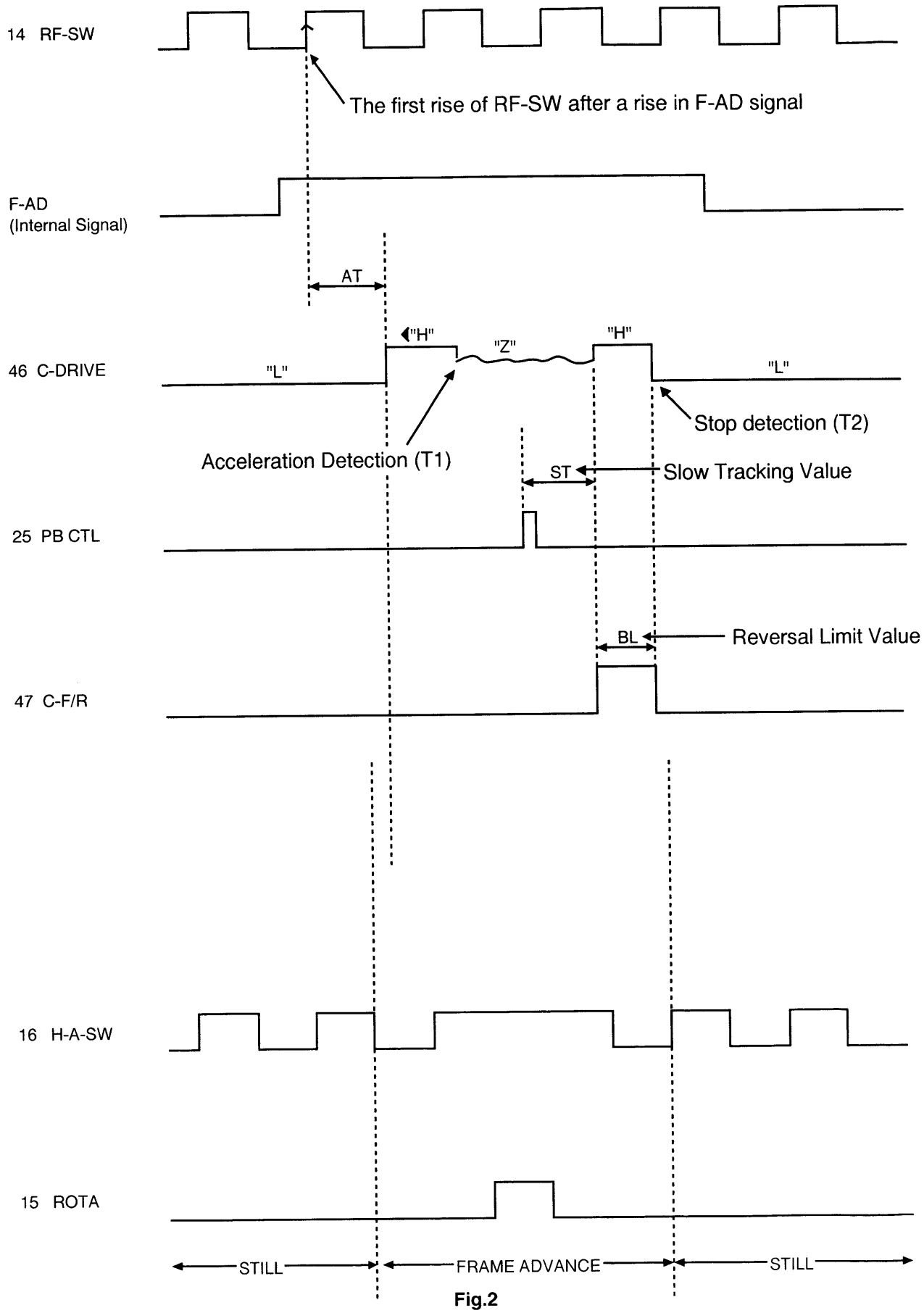


Fig.2

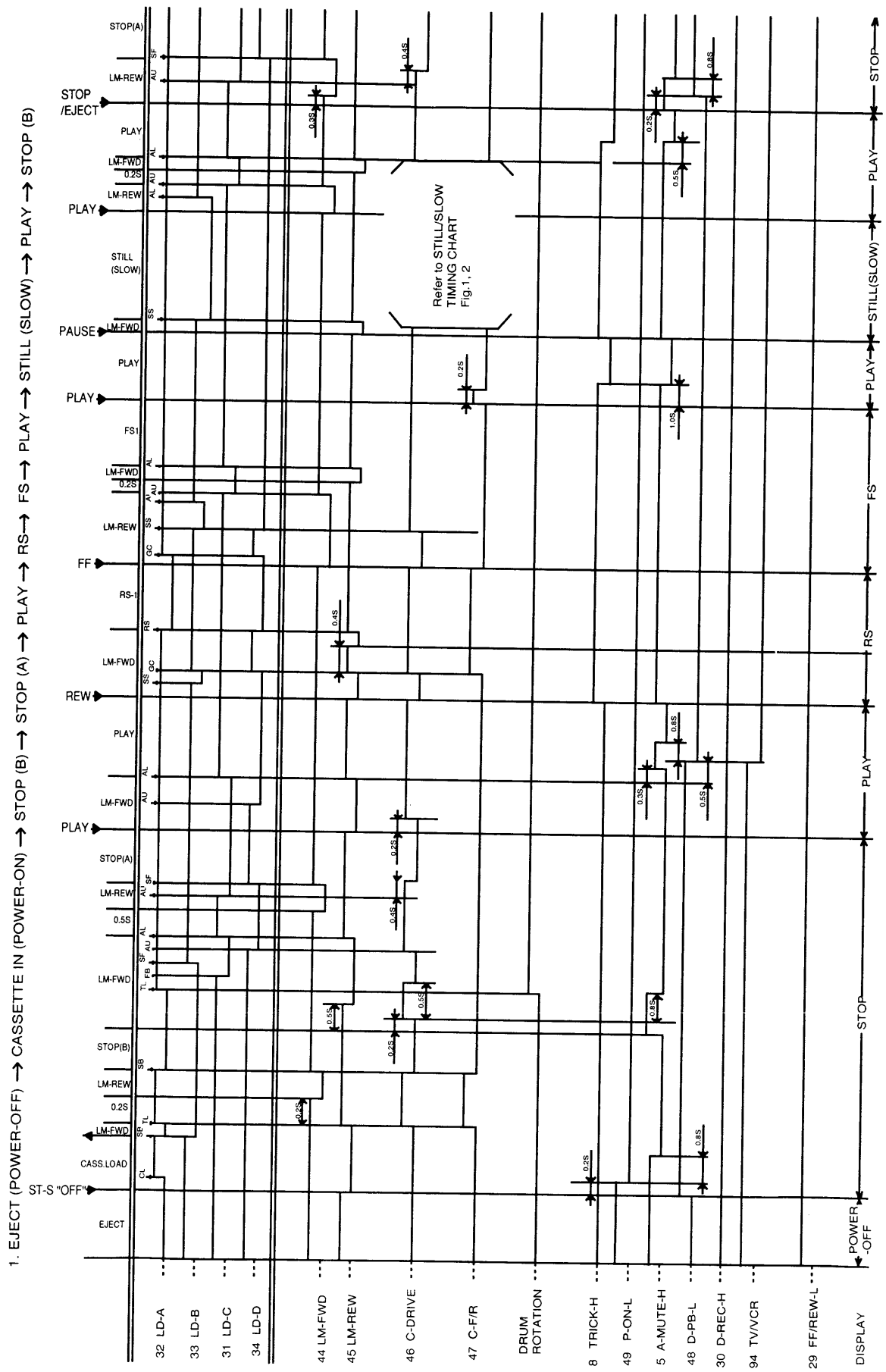

1. EJECT (POWER-OFF) → CASSETTE IN (POWER-ON) → STOP (B) → STOP (A) → PLAY → RS → FS → PLAY → STILL (SLOW) → PLAY → STOP (B)
STOP /EJECT
PLAY
LM-FWD 0.2S
LM-REW
PLAY
STILL (SLOW)
PAUSE
LM-FWD
PLAY
PLAY
FS1
LM-FWD 0.2S
LM-REW
FF
RS-1
LM-FWD
REW
PLAY
LM-FWD
PLAY
STOP(A)
LM-REW
0.5S
LM-FWD
STOP(B)
LM-REW
0.2S
LM-FWD
CASS.LOAD
ST-S "OFF"
EJECT
Refer to STILL/SLOW TIMING CHART Fig. 1, 2
STOP
PLAY
STILL(SLOW)
PLAY
FS
RS
PLAY
STOP
POWER -OFF
32 LD-A
33 LD-B
31 LD-C
34 LD-D
44 LM-FWD
45 LM-REW
46 C-DRIVE
47 C-F/R
DRUM ROTATION
8 TRICK-H
49 P-ON-L
5 A-MUTE-H
48 D-PB-L
30 D-REC-H
94 TV/VCR
29 FF/REW-L
DISPLAY

Fig.3

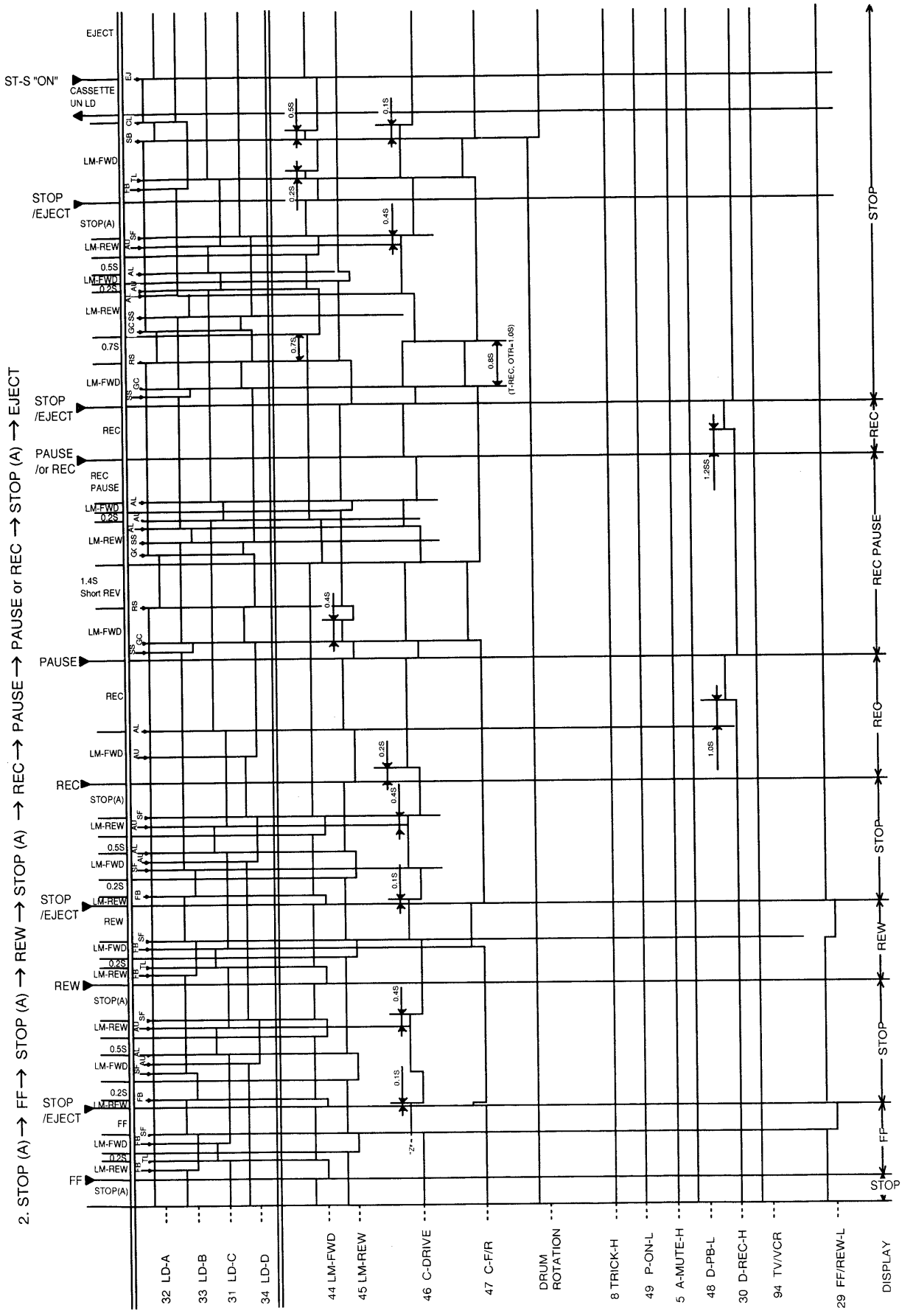

2. STOP (A) → FF → STOP (A) → REW → STOP (A) → REC → PAUSE → PAUSE or REC → STOP (A) → EJECT
EJECT
ST-S "ON"
CASSETTE UN LD
STOP /EJECT
STOP(A)
LM-REW
LM-FWD
REC
PAUSE /or REC
REC PAUSE
1.4S Short REV
PAUSE
REW
FF
0.5S
0.2S
0.7S
0.4S
0.1S
0.8S (T=REC, OTR=1.0S)
1.2SS
1.0S
-Z-
32 LD-A
33 LD-B
31 LD-C
34 LD-D
44 LM-FWD
45 LM-REW
46 C-DRIVE
47 C-F/R
DRUM ROTATION
8 TRICK-H
49 P-ON-L
5 A-MUTE-H
48 D-PB-L
30 D-REC-H
94 TV/VCR
29 FF/REW-L
DISPLAY
STOP
REC
REC PAUSE
REC
STOP
REW
STOP
FF
STOP

Fig.4

IC PIN FUNCTION DESCRIPTION

Comparison Chart of Models and Marks

MODEL	MARK
VT-MX411AC	A
VT-MX411A	B
VT-FX600AC	C
VT-FX600A	D
VT-FX411C	E
VT-FX600C	F

IC501 (SERVO / SYSTEM CONTROL IC)

"H" ≥ 4.5V, "L" ≤ 1.0V

Pin No.	Mark	IN/ OUT	Signal Name	Function	Active Level
1	A,B, E	–	N.U.	–	–
	C,D, F	OUT	ST-H/ SAP-L	STEREO/ SAP Switching Output STEREO "H" / SAP "L"	H/L
2	A,B, E	–	N.U.	–	–
	C,D, F	OUT	SAP-H	SAP "H" Output	H/L
3		OUT	C-CONT	Capstan Motor Control Signal	PWM
4		OUT	D-CONT	Drum Motor Control Signal	PWM
5		OUT	A-MUTE-H	Audio Mute Signal Output	H
6		OUT	SLP-H	EP-H Output	H/L
7		OUT	LP/SLP-H	LP/EP-H Output	H/L
8		OUT	TRICK-H	Special Play Back "H" Output	H
9		OUT	OSD-BLUE-L	Blue Back Control Signal Output (ON= "L")	L
10		OUT	D-V-SYNC	Dummy V-Sync Output	H/ Hi-Z
11		IN	REMOCON	Remote Control Input Signal	L
12		IN	S-REEL	Supply Reel Rotation Input Signal	PULSE
13	A,B, E	–	N.U.	–	–
	C,D, F	OUT	Hi-Fi-SW	Hi-Fi-SW Output	H/L
14		OUT	RF-SW	Video HeadSwitching Pulse	H/L
15		OUT	ROTA	Color Phase Rotary Changeover Signal	H/L
16		OUT	H-A-SW	H-A-SW Output	H/L
17		IN	H-A-COMP	Head Amp Comparator Input	H/L
18		IN	T-REEL	Take Up Reel Rotation Input Signal	PULSE
19	A,B, E	–	N.U.	–	–
	C,D, F	IN	AUDIO-MODE	Audio Mode Input "Hi-Fi"= "H" ,"Mono" ="L" (P.B MODE)	H/L
20		OUT	REC-CTL	Capstan Motor Control Pulse Output at Rec Mode	H/L
21		OUT	STILL/ SLOW-L	STILL/ SLOW "L" Output	L
22		IN	C-FG	Capstan Frequency Generator Signal Input	PULSE
23		IN	D-PG	Drum Pulse Generator Input	PULSE

Pin No.	Mark	IN/ OUT	Signal Name	Function	Active Level
24		IN	D-FG	Drum Frequency Generator Input	PULSE
25		IN	PB-CTL	Capstan Motor Control Pulse Input at Playback Mode	PULSE
26		–	Vcc	Vcc	–
27		OUT	SOFT-H	Rental Position Mode Switching Signal (Rental Position = "H"	H
28		OUT	OSD-CS	On Screen Display IC Control Chip Select Signal	L
29		OUT	FF/REW-L	FF/REW Control Output Signal(FF/ REW="L")	L
30		OUT	D-REC-H	D-REC Output	H
31		IN	LD-C	Loading Position Detector	H/L
32		IN	LD-A	Loading Position Detector	H/L
33		IN	LD-B	Loading Position Detector	H/L
34		IN	LD-D	Loading Position Detector	H/L
35		–	GND	–	–
36		–	GND	–	–
37		IN	RESET	System Reset Signal (Usually= "H"/Reset= "L")	L
38		–	XIN	Main Clock 14.31818 MHz	–
39		–	Xout	Main Clock	–
40		–	GND	–	–

Pin No.	Mark	IN/ OUT	Signal Name	Function	Active Level
41		–	Vss (GND)	Vss	–
42		–	VCIN	Sub Clock 32 KHz	–
43		–	XCOUT	Sub Clock 32 KHz	–
44		OUT	LM-FWD	Loading Motor Forward Control Output	H
45		OUT	LM-REV	Loading Motor Reverse Control Output	H
46		OUT	C-DRIVE	Capstan Drive Output	H/Hi-Z
47		OUT	C-F/R	Capstan F/R Output	H/L
48		OUT	D-PB-L	D-PB-L Output	L
49		OUT	P-ON-L	Power-ON Control Signal	L
50		IN	P-DOWN-L	Power Down Detection Input	L
51		–	N.U.	–	–
52		–	N.U.	–	–
53		–	N.U.	–	–
54		–	N.U.	–	–
55		OUT	G1	Display Digit Output	H
56		OUT	G2	Display Digit Output	H
57		OUT	G3	Display Digit Output	H
58		OUT	G4	Display Digit Output	H
59		OUT	G5	Display Digit Output	H
60		OUT	G6	Display Digit Output	H
61		OUT	G7	Display Digit Output	H
62		OUT	G8	Display Digit Output	H
63		OUT	G9	Display Digit Output	H
64		OUT	G10	Display Digit Output	H

Pin No.	Mark	IN/ OUT	Signal Name	Function	Active Level
65		OUT	j	Display Digit Output	H
66		OUT	i	Display Digit Output	H
67		OUT	h	Display Digit Output	H
68		OUT	g	Display Digit Output	H
69		OUT	a	Display Digit Output	H
70		OUT	b	Display Digit Output	H
71		OUT	c	Display Digit Output	H
72		OUT	d	Display Digit Output	H
73		OUT	e	Display Digit Output	H
74		OUT	f	Display Digit Output	H
75		–	-28V	–	–
76		–	Vcc	Vcc	–
77		OUT	PLL/ OSD-DATA	Tuner Control Signal (Data)/On-Screen IC Control (Data)	H/L
78		–	N.U.	–	–
79		OUT	PLL/OSD-CLK	Tuner Control Signal (Clock)/On-Screen IC Control (Clock)	H/L
80		OUT	PLL-ENA	Tuner Control Signal (Enable)	H
81		–	Vcc	Vcc	–
82		–	VREF	Servo Reference Voltage	–
83	A,B, E	–	N.U.	–	–
	C,D, F	OUT	A-CONT1	Audio Control 1 Output	H/L
84		–	N.U.	–	–

Pin No.	Mark	IN/ OUT	Signal Name	Function	Active Level
85		IN	KEY IN-1	A/D Key Data Signal Input	A/D
86		IN	KEY IN-2	A/D Key Data Signal Input	A/D
87	A,B, E	–	N.U.	–	–
87	C,D, F	IN	STEREO-IN / SAP-IN	Tuner STEREO / SAP Input	A/D
88		IN	AFC	Tuner AFC Voltage Signal Input	A/D
89		IN	PG-DELAY / TEST	RF-SW Signal Delay Adjust Voltage Input	A/D
90		IN	V-ENV / REC-SW	Video DC Envelope Voltage Input/Recording Safety SW Detect	A/D
91		IN	END-S	Tape End Position Detect	A/D
92		IN	ST-S	Tape Start Position Detect	A/D
93		IN	C-SYNC	Composite Sync Signal Input	PULSE
94		OUT	TV/VCR	RF Conv. ON/OFF Signal	H/L
95		–	N.U.	–	–
96		–	N.U.	–	–
97		–	N.U.	–	–
98		–	N.U.	–	–
99		OUT	INSEL-2	Input Selector Control Signal 2	H/L
100		OUT	INSEL-1	Input Selector Control Signal 1	H/L

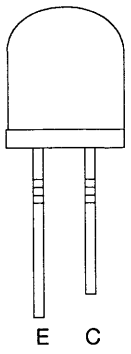
Notes: Abbreviation for Active Level

PWM ---------- Pulse Wide Modulation

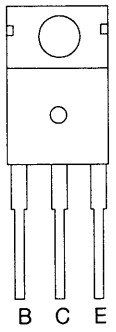
A/D ---------- Analog - Digital Converter

LEAD IDENTIFICATION

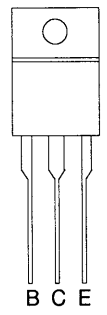
PT380FAB



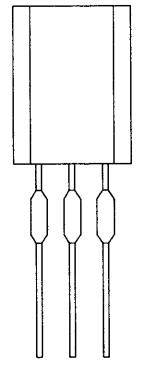
KSC5020 (O,R)



2SC4953

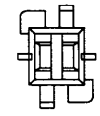


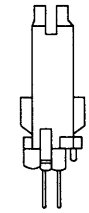
2SA1654
KTA1267 (Y,GR)
KSA1175 (Y,G)
KTC3193 (Y)



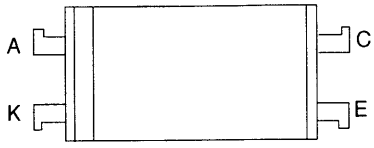
2SC3400
KSR2205
KSR2203
KSC2785 (Y,G,L)
2SA608SP(E,F)
2SA1317 (S,T)
2SA1346
2SC536SP(E,F,G)
2SC2839(E,F)
2SC3576
KTA1266 (Y,GR)
KTC3199 (Y,GR, BL)
KRA103M
KRA101M
KRC103M
KSR1203

SG-231





PC-17T1
TLP521-1(GR)
ON3131-R
PC817(B, AB,A)
PS2501-1(D, H, L, M, W)



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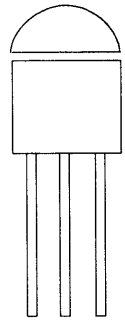
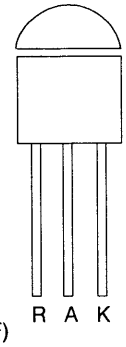
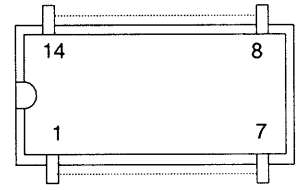
2SC3331(T, U)



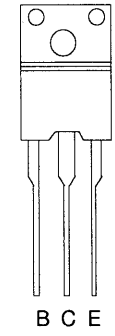


KA431Z
AN1431T
L5431
KIA431

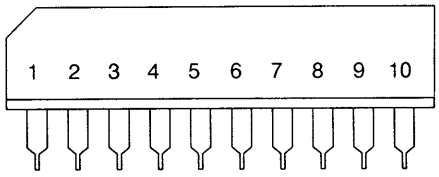
NJM324D / KA324
KIA339P / LC89962
KIA324P / KA339
NJM2901N



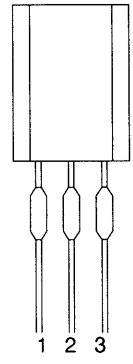
2SC4418

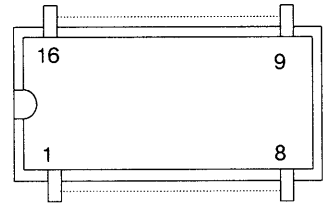


LB1641



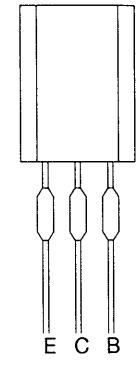
2SB544(E,F)





TC4052BP
UPD4052BC
NJU4052BD

2SD400(F)



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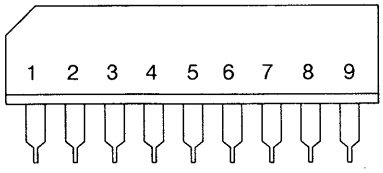

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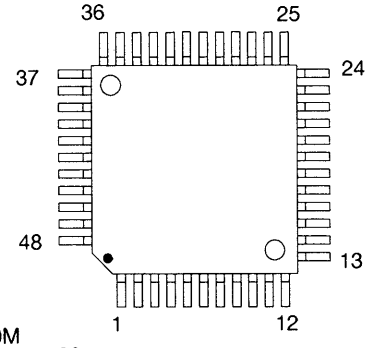

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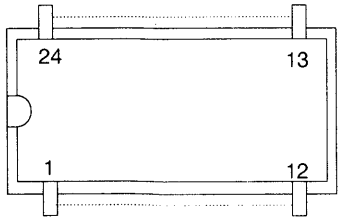
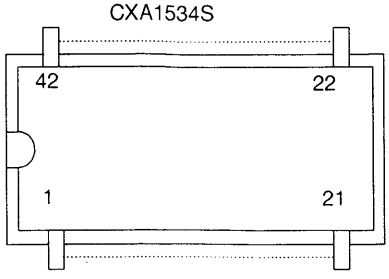


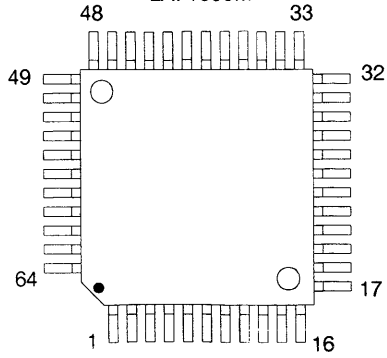
Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference

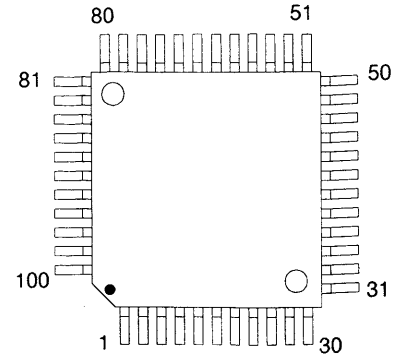
QSMQA0RMB087
QSMQA0RMB085
QSMQB0RMB085

CXA1534S



LA71000M





DECK MECHANISM SECTION

VIDEO CASSETTE RECORDER

VT-MX411A / VT-MX411AC / VT-MX411C / VT-FX600A / VT-FX600AC / VT-FX600C

DECK MECHANISM SECTION

- **Standard Maintenance**
- **Mechanical Alignment Procedures**
- **Disassembly/Assembly of Mechanism**
- **Alignment for Mechanism**

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Mechanical Alignment Procedures 2-3-1
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Alignment Procedures of Mechanism 2-4-12

STANDARD MAINTENANCE

Service Schedule of Components

H: Hours ❍: Check ●: Change

Deck		Periodic Service Schedule			
Ref. No.	Part Name	1,000 H	2,000 H	3,000 H	4,000 H
B2	Cylinder Assembly	❍	●	❍	●
B3	Loading Motor			●	
B6	Pinch Roller Arm Assembly		●		●
B8	Pulley Assembly		●		●
B21	Loading Belt		●		●
B27	Band Brake Assembly		●		●
B28	Main Brake S Assembly		●		●
B29	Main Brake T Assembly		●		●
B30	T Brake Arm Assembly		●		●
B31	ACE Head Assembly			●	
B32, B339	Reel Assembly			●	
B37	Capstan Motor		●		●
B52	Capstan Belt		●		●
B54	Ground Brush Assembly			●	
B73	FE Head				
B132	Clutch Assembly		●		●
B133	Arm Idler Assembly		●		●

Note:

1. Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / Audio Control Head / Full Erase Head) using 90% Isopropyl Alcohol.
2. After cleaning the parts, do all DECK ADJUSTMENTS.
3. For the reference numbers listed above, refer to Deck Exploded Views.

Cleaning

Cleaning of Video Head

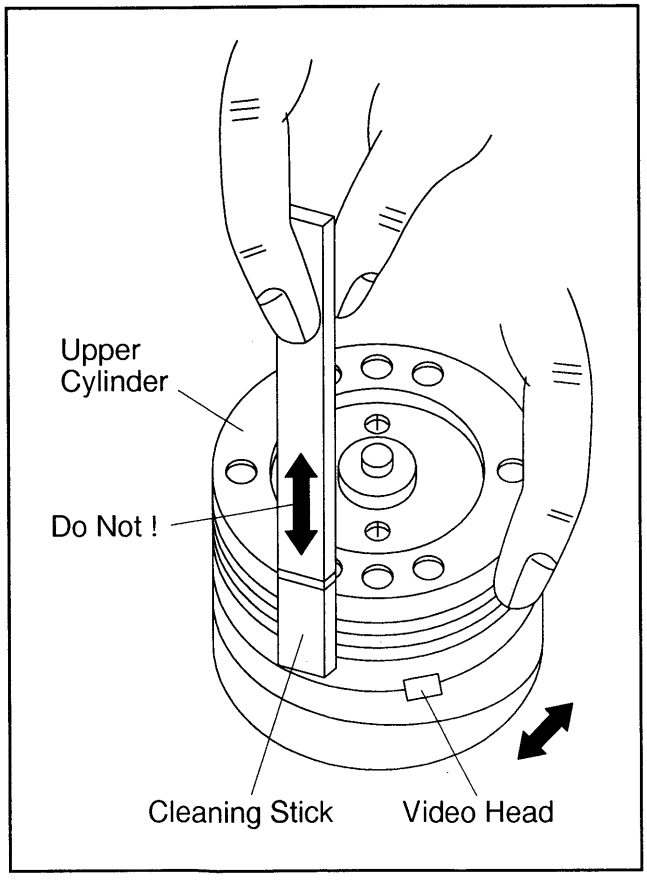
Clean the head with a head cleaning stick or chamois skin.

Procedure

1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois skin and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

Notes:

1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois skin.



Cleaning of Audio Control Head

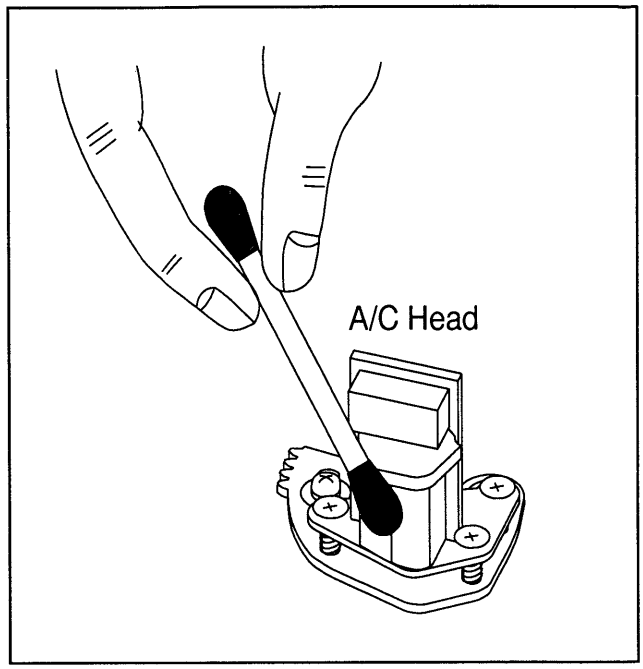
Clean the head with a cotton swab.

Procedure

1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the audio control head. Be careful not to damage the upper drum and other tape running parts.

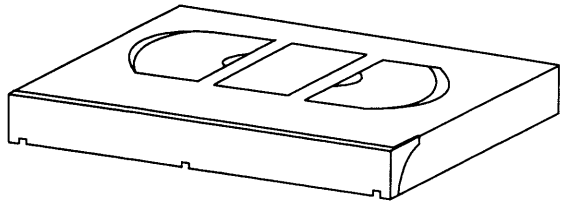
Notes:

1. Avoid cleaning the audio control head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.

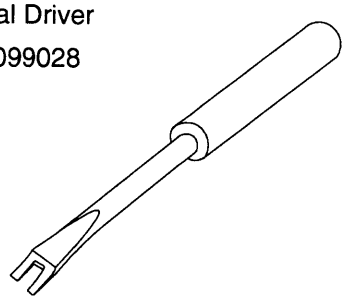


FIXTURE AND TAPE FOR ADJUSTMENT

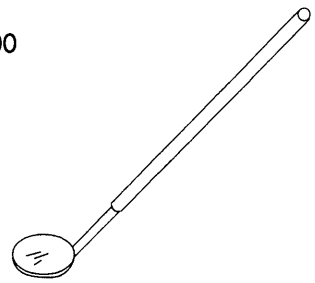
1. Alignment Tape
   No. 7099046 (MH-1)
   No. 7099089 (30HMP2-1)



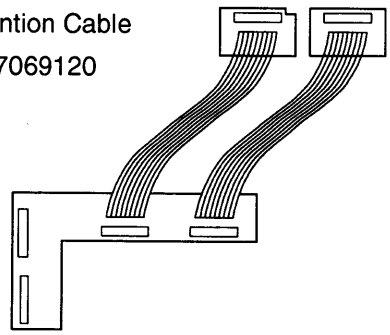
2. Special Driver
   No. 7099028



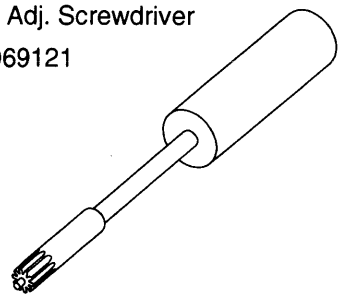
3. Box Driver
   No. 7099200



4. Extention Cable
   No. 7069120



5. X Valu Adj. Screwdriver
   No. 7069121



HOW TO USE THE FIXTURES AND TAPE

Item No.	Name	Part No.	How to used
1	Alignment Tape	7099046 7099089	● Head Switching Point ● Tape Interchangeability Alignment
2	Special Driver	7099028	● Guide Roller
3	Box Driver	7099200	● A/C Head Height
4	Extention Cable	7069120	● All Mechanical and Electrical Adjustments
5	X Valu Adj. Screwdriver	7069121	● X Value Adjustment

MECHANICAL ALIGNMENT PROCEDURES

Explanation of alignment for the tape to correctly run starts on the next page. Refer to the information below on this page if a tape gets stuck, for example, in the mechanism due to some electrical trouble of the unit.

Service Information

A. Method for Manual Tape Loading/Unloading

To load a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Cover.
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see if the tape comes back out, by a spring motion, just as much as you have pushed in.
4. Turn the Pulley Assembly in the appropriate direction shown in Fig. M1 until the cassette tape is fully loaded. By turning the Pulley Assembly, you are turning the cam indicated in this figure. However, movement of the cam will be very slow. Allow a minute or two to complete this task.

To unload a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Cover.
3. Turn the Pulley Assembly in the appropriate direction shown in Fig. M1 to unload the cassette tape. When turning the Pulley Assembly, please be aware that this is a long process and the cassette will not start getting unloaded instantaneously. Within this long process, before the cassette actually starts getting unloaded, there is a time period during which the moving guide assemblies slide back to their original positions shown in Fig. M1. However, the tape will be left wound around the cylinder. To put the tape back into the cassette, gently turn the Capstan Motor in the direction shown in Fig. M2. Make sure that the tape is completely placed back in the cassette before the cassette starts getting unloaded. Otherwise the tape hanging out will be caught and damaged by the lid of the cassette when it closes.
   By turning the Pulley Assembly, you are turning the cam indicated in Fig. M1. As stated, movement of the cam will be very slow. Allow a minute or two to complete this task.

B. Method to place the Cassette Holder in the tape-loaded position without a cassette tape

1. Disconnect the AC Plug.
2. Remove the Top Cover.
3. Turn the Pulley Assembly in the appropriate direction shown in Fig. M1 until the Cassette Holder comes to the tape-loaded position. Allow a minute or two to complete this task.

Top View

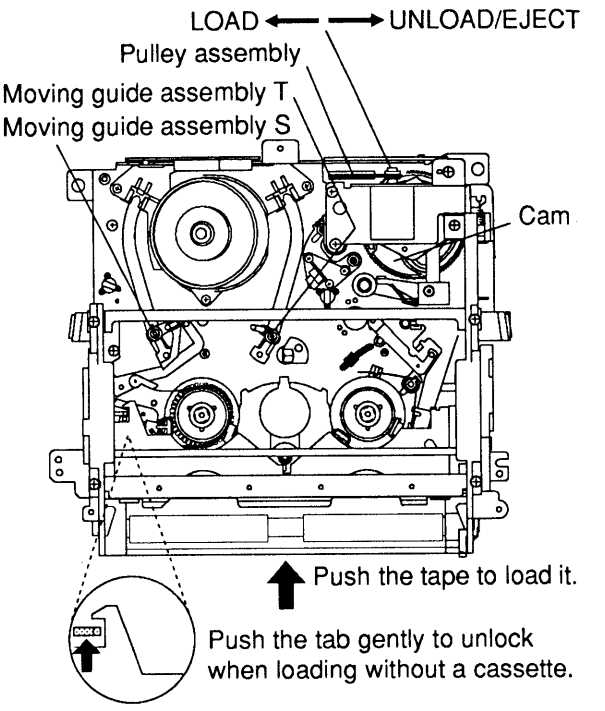

LOAD ← → UNLOAD/EJECT
Pulley assembly
Moving guide assembly T
Moving guide assembly S
Cam
Push the tape to load it.
Push the tab gently to unlock when loading without a cassette.

Fig. M1

Bottom View

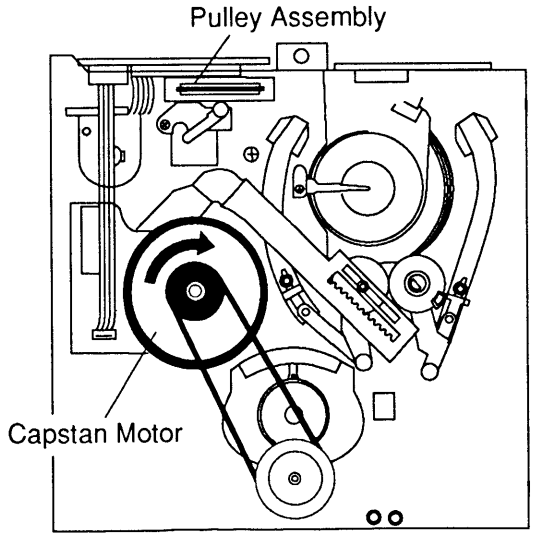


Fig. M2

1. Tape Interchangeability Alignment

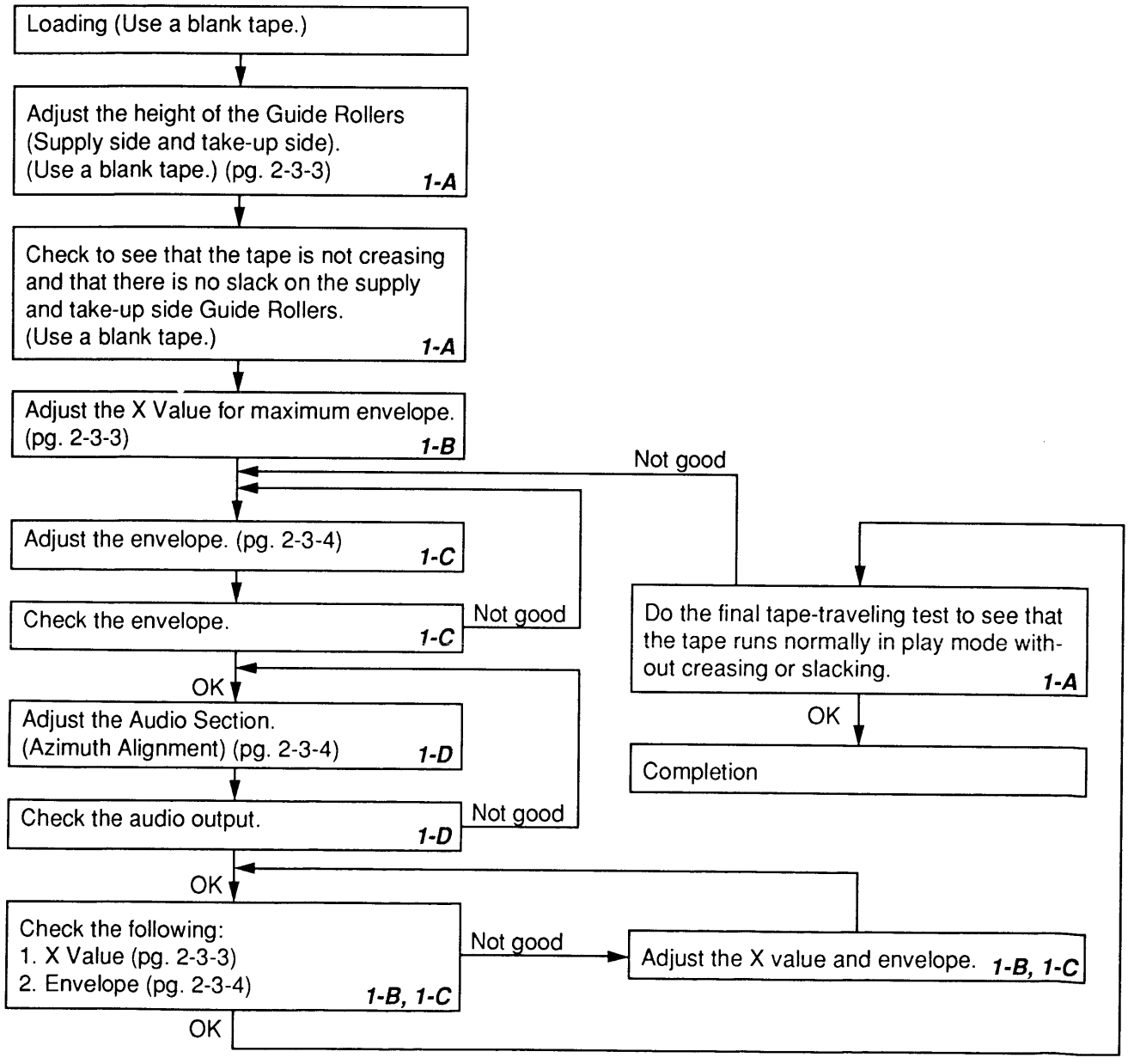
Note: To do these alignment procedures, make sure that the Tracking Control Circuit is set to the center position every time a tape is loaded or unloaded. (Refer to page 2-3-4, procedure 1-C, step 1.)

Equipment required:

Dual Trace Oscilloscope
VHS Alignment Tape
Guide Roller Adj. Screwdriver
X-Value Adj. Screwdriver

Note: Before starting this Mechanical Alignment, do all Electrical Adjustment procedures.

Flowchart of Alignment for tape traveling


Loading (Use a blank tape.)
Adjust the height of the Guide Rollers (Supply side and take-up side). (Use a blank tape.) (pg. 2-3-3) 1-A
Check to see that the tape is not creasing and that there is no slack on the supply and take-up side Guide Rollers. (Use a blank tape.) 1-A
Adjust the X Value for maximum envelope. (pg. 2-3-3) 1-B
Not good
Adjust the envelope. (pg. 2-3-4) 1-C
Check the envelope. 1-C
Not good
OK
Adjust the Audio Section. (Azimuth Alignment) (pg. 2-3-4) 1-D
Check the audio output. 1-D
Not good
OK
Check the following:
1. X Value (pg. 2-3-3)
2. Envelope (pg. 2-3-4) 1-B, 1-C
Not good
Adjust the X value and envelope. 1-B, 1-C
OK
Do the final tape-traveling test to see that the tape runs normally in play mode without creasing or slacking. 1-A
OK
Completion

1-A. Preliminary/Final Checking and Alignment of Tape Path

Purpose:

To make sure that the tape path is well stabilized.

Symptom of Misalignment:

If the tape runs unstable, the tape will be damaged.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Play back a blank cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig M3 and M4.)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Guide Roller Adj. Screwdriver. (Refer to Fig. M3 and M5.)
   Note: Beneath each Guide Roller, there is a small screw. (Refer to Fig. M5.) This screw works to apply adequate torque to the shaft of each Guide Roller so that the Guide Roller turns properly. Even when adjusting the height of the Guide Roller(s), do not touch these two small screws.
3. Check to see that the tape runs without creasing at Take-up Guide Post [4] or without snaking between Guide Roller [3] and ACE Head. (Fig. M3 and M5)
4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the ACE Head. (Fig. M6)

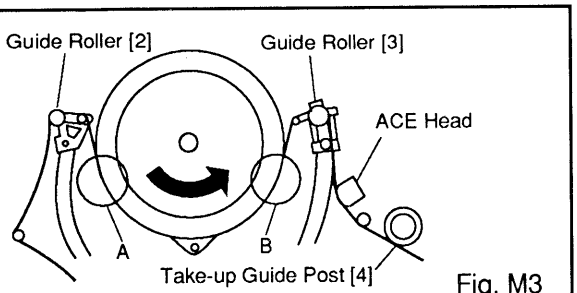


Fig. M3

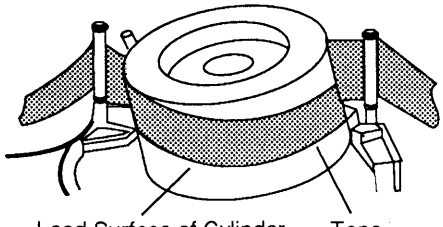


Fig. M4

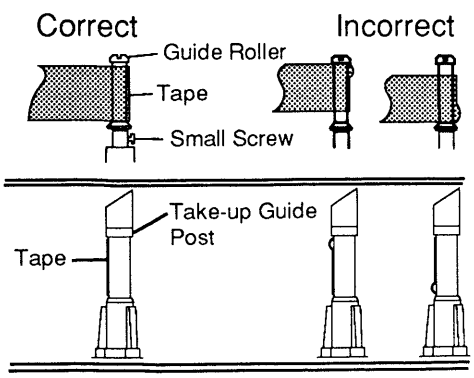


Fig. M5

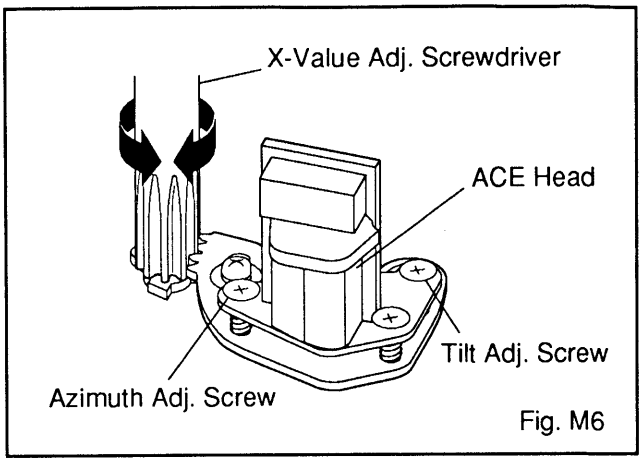


Fig. M6

1-B. X Value Alignment

Purpose:

To align the Horizontal Position of the Audio/Control/Erase Head.

Symptom of Misalignment:

If the Horizontal Position of the Audio/Control/Erase Head is not properly aligned, maximum envelope cannot be obtained at the Neutral position of the Tracking Control Circuit.

1. Set the Tracking Control Circuit to the center position by pressing CH UP and DOWN buttons on VCR simultaneously. (Refer to note on page 2-3-4.)
2. Connect the oscilloscope to TP (C-PB) and TP (CTL) on the Main CBA. Use TP (RF-SW) as a trigger.
3. Play back the Gray Scale of the Alignment Tape (30HMP2-1) and confirm that the PB FM signal is present.
4. Use the X-Value Adj. Screwdriver so that the PB FM signal at TP (C-PB) or TP of AUDIO OUT is maximum. (Fig.M6)
5. Press CH UP button on VCR until CTL waveform is shifted by approx. +2msec. Make sure that the envelope is simply attenuated (shrinks in height) during this process so that you will know the envelope has been at its peak.
6. Press CH DOWN button on VCR until CTL waveform is shifted from its original position (not the po-

sition achieved in step 5 just above, but the position of CTL waveform until step 4) by approximately -2msec. Make sure that the envelope is simply attenuated (shrinks in height) once CTL waveform passes its original position and is further brought in the minus direction.

7. Set the Tracking Control Circuit to the center position by pressing CH UP and DOWN buttons on VCR simultaneously.

1-C. Checking/Adjustment of Envelope Waveform

Purpose:

To achieve a satisfactory picture and precise tracking.

Symptom of Misalignment:

If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control Circuit.

1. Set the Tracking Control Circuit to the center position by pressing both CH UP and DOWN buttons on VCR simultaneously.
2. Connect the oscilloscope to TP (C-PB) on the Main CBA. Use TP (RF-SW) as a trigger.
3. Play back the Gray Scale on the Alignment Tape (30HMP2-1 or MH1). Adjust the height of Guide Rollers [2] and [3] (Fig.M3) watching the oscilloscope display so that the envelope becomes as flat as possibile. To do this adjustment, turn the top of the Guide Roller with the Guide Roller Adj. Screwdriver.
4. If the envelope is as shown in Fig. M7, adjust the height of Guide Roller [2] (Refer to Fig.M3) so that the waveform looks like the one shown in Fig. M9.
5. If the envelope is as shown in Fig. M8, adjust the height of Guide Roller [3] (Refer to Fig.M3) so that the waveform looks like the one shown in Fig. M9.
6. When Guide Rollers [2] and [3] (Refer to Fig.M3) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in Fig. M9.

Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig. M3), check the X Value by pushing the Tracking Control Up or Down buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure center position. The number of pushes UP to achieve 1/2 level of envelope should match the number of pushes DOWN from center. If required, redo the "X Value Alignment."

1-D. Azimuth Alignment of Audio/Control/Erase Head

Purpose:

To correct the Azimuth alignment so that the Audio/Control/Erase Head meets tape tracks properly.

Symptom of Misalignment:

If the position of the Audio/Control/Erase Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Play back the alignment tape (30HMP2-1 or MH-1) and confirm that the audio signal output level is 8 kHz.
3. Adjust Azimuth Adj. Screw so that the output level on the AC Voltmeter or the waveform of the oscilloscope is at maximum. (Fig. M6)

Dropping envelope level at the beginning of track.

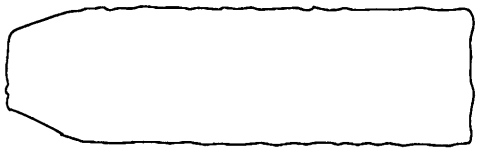


Fig. M7

Dropping envelope level at the end of track.

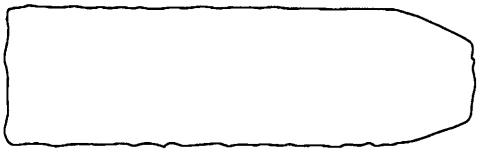


Fig. M8

Envelope is adjusted properly. (No envelope drop)

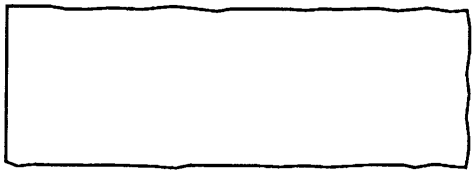


Fig. M9

DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM

Main Mechanism

Before following the procedures described below, be sure to:

1. Remove the deck assembly from the cabinet.
   (Refer to DISASSEMBLY INSTRUCTIONS in Section 1.)
2. Remove Front Loading Assembly from the main mechanism of the deck assembly. (See Fig. DM1.)

All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [33] and [34] in Fig. DM3 on page 2-4-4. When reassembling, follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Shield Plate	T	DM1	2(S-3)	
[2]	[1]	Motor Holder Assembly	T	DM3 DM5 DM6	3(S-4), Loading Belt	(+) Refer to Alignment Sec. Pg. 2-4-12.
[3]	[1]	Loading Motor Assembly	T	DM2 DM3 DM5	2(S-5), CL2693	
[4]	[1]	Cassette Drive Lever Assembly	T	DM3 DM5		(+) Refer to Alignment Sec. Pg. 2-4-12.
[5]	[1]	Pinch Roller Arm Assembly	T	DM3 DM5	(C-1) Pinch Roller Spring	Refer to Alignment Sec. Pg. 2-4-12.
[6]	[1]	Pinch Arm Assembly	T	DM3 DM5		Refer to Alignment Sec. Pg. 2-4-12.
[7]	[7]	Mode SW CBA	B	DM4 DM8	Stopper Boss, *(L-1)	
[8]	[8]	Joint CBA	T/B	DM2 DM3 DM4 DM7 DM8	(S-6), CN2692, CL2693, *CL2691, CL2692	
[9]	[1]	Cam	T	DM3 DM5		(+) Refer to Alignment Sec. Pg. 2-4-12.
[10]	[1]	Pulley Assembly	T	DM3 DM6	(W-1), Loading Belt	(+)
[11]	[11]	Head Amp CBA	T/B	DM2 DM3 DM4 DM8	(S-7), (S-8), (S-22) CN3802, CL3801, CL3802	
[12]	[12]	Arm Idler Assembly	T	DM3 DM9	Clutch Bushing	(+)
[13]	[13]	Clutch Assembly	B	DM4 DM9	(C-2), (W-2) Capstan Belt	(+)
[14]	[13]	Capstan Motor Unit	B	DM4 DM10	3(S-9)	
[15]	[1]	M Lever Holder	T	DM3 DM11	(S-10)	(+) Oil, (+) Grease
[16]	[1]	Kick Arm Holder	B	DM4 DM11	Kick Arm Spring	
[17]	[16]	Kick Arm	B	DM4 DM11	Bushing	(+)
[18]	[18]	Mode Change Lever	T	DM3 DM12	*2(L-2)	(+)
[19]	[1]	Main Lever Assembly	T	DM3 DM12 DM15	*(L-3)	
[20]	[20]	Tape Guide Assembly	T	DM3 DM15	*(P-2), *(L-4)	Keep the distance specified in Fig. DM15.
[21]	[21]	ACE Head Assembly	T	DM3 DM14	2(S-11)	

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[22]	[22]	Tension Lever Sub Assembly	T	DM3 DM13 DM22	*(L-5) *(P-6)	Refer to Alignment Sec. Pg. 2-4-14.
[23]	[22]	Band Brake Sub Assembly	T	DM3 DM13	(S-12), *(L-6)	
[24]	[18]	M Brake (S) Lever	T	DM3 DM12 DM16		(+)
[25]	[18]	M Brake (S)	T	DM3 DM16	*(P-3), *(L-7)	(+) When reassem-bling, hook the spring (P-3) after installation of Mode Change Lever.
[26]	[18]	S Brake Arm	T	DM3 DM16	*(P-4), *(L-8)	(+) When reassem-bling, hook the spring (P-4) after installation of Mode Change Lever.
[27]	[18]	M Brake (T) Assembly	T	DM3 DM16		(+)
[28]	[18]	T Brake Arm Assembly	T	DM3 DM16	*(P-5)	(+) When reassem-bling, hook the spring (P-5) after installation of Mode Change Lever.
[29]	[18]	Reel Base Assembly T	T	DM3 DM17	Poly Slider Washer	(+)
[30]	[18]	Reel Base Assembly S	T	DM3 DM17	Poly Slider Washer	(+) Base has slots.
[31]	[31]	Ground Brush Assembly	B	DM4 DM18 DM19	(S-13)	Refer to Alignment Sec. Pg. 2-4-12.
[32]	[11],[31] Only	Cylinder Assembly	T	DM3 DM18	3(S-14)	Refer to Alignment [31] Sec. Pg. 2-4-12.
[33]	[1]	Moving Guide S Assembly	T	DM3 DM20		
[34]	[1]	Moving Guide T Assembly	T	DM3 DM20		
[35]	[1] Only	FE Head	T	DM3 DM20	(S-15)	
[36]	[36]	Main Prism	T	DM3 DM20	(S-16)	
[37]	[1]	Loading Arm M Assembly	B	DM4 DM21	(C-3)	(+) Refer to Alignment Sec. Pg. 2-4-12.
[38]	[1]	Loading Gear A	B	DM4 DM21		(+) Refer to Alignment Sec. Pg. 2-4-12.
[39]	[1]	Loading Gear B	B	DM4 DM21		(+) Refer to Alignment Sec. Pg. 2-4-12.
[40]	[40]	Spring Supporter	B	DM4 DM22	(S-17)	
[41]	[40]	BT Drive Arm	B	DM4 DM12 DM22	(S-18), *(P-6), *(P-7)	
[42]	[42]	Rec Arm Assembly	B	DM4 DM22	(S-19)	
[43]	[42]	Reel Drive Arm	B	DM23	(S-20), (C-4), *(P-8) Drive Arm Roller	
[44]	[42]	Holder Kick Arm	B	DM23	*(P-9)	
[45]	[45]	F Brake (2)	B	DM4 DM10	CS Ring	
[46]	[45]	F Brake Guide	B	DM4 DM10	2(S-21) F Brake Spring	

① ② ③ ④ ⑤ ⑥ ⑦

①: Follow steps in sequence. When reassembling, follow the steps in reverse order.
These numbers are also used as identification (location) No. of parts in the figures.

②: Indicates the part to start disassembly in order to disassemble the part in column (1).

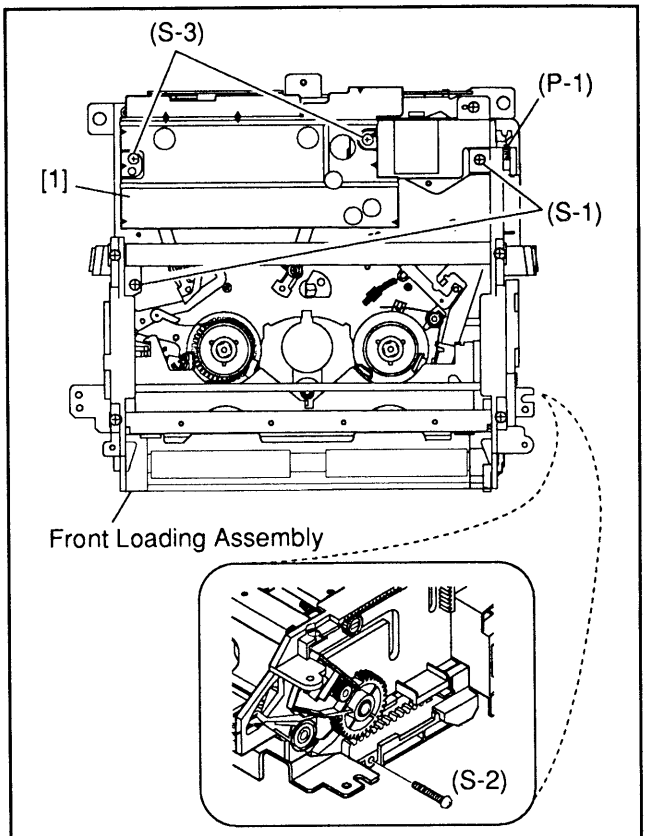
③: Name of the part

④: Location of the part
T=Top B=Bottom R=Right L=Left

⑤: Figure Number

⑥: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, W=Washer, C=Cut Washer, S=Screw
L=Locking Tab
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(C-2) = two Cut Washers (C-2)
2(L-2) = two Locking Tabs (L-2)

⑦: Adjustment Information for Installation
(+): Refer to Deck Exploded Views for lubrication information.



To remove Front Loading Assembly:
1. Remove 3 screws; 2(S-1) and (S-2).
2. Unhook spring (P-1).
3. Lift Assembly up carefully.

Fig. DM1

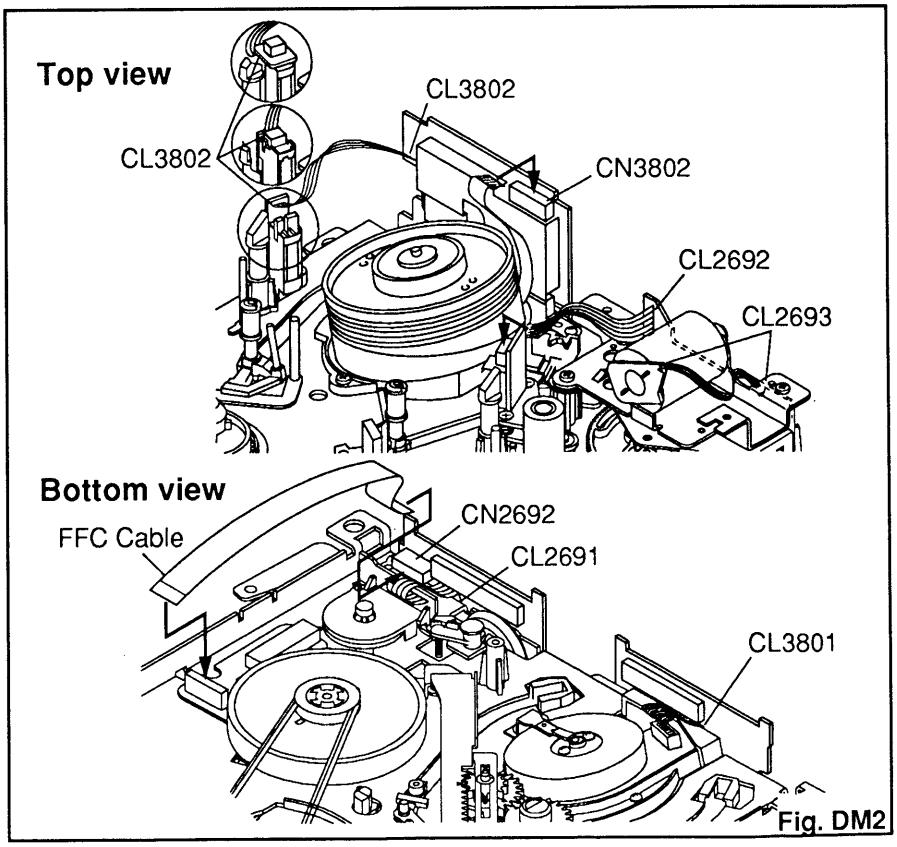


Fig. DM2

Top View

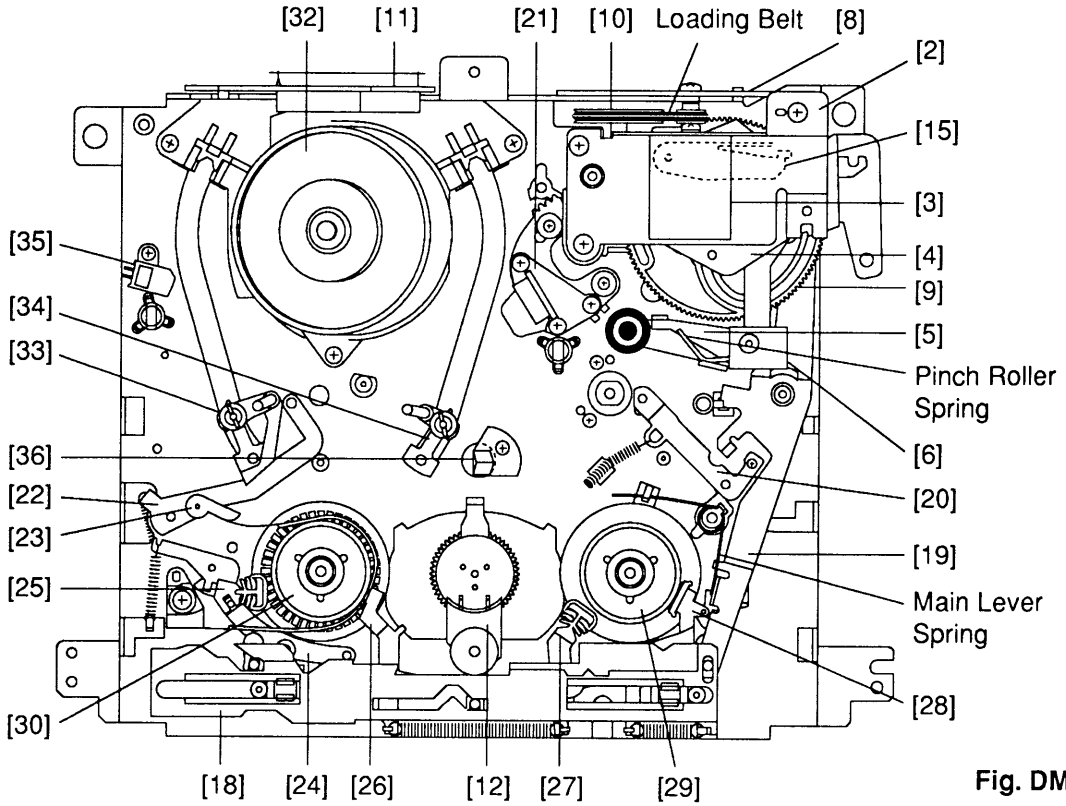


Fig. DM3

Bottom View

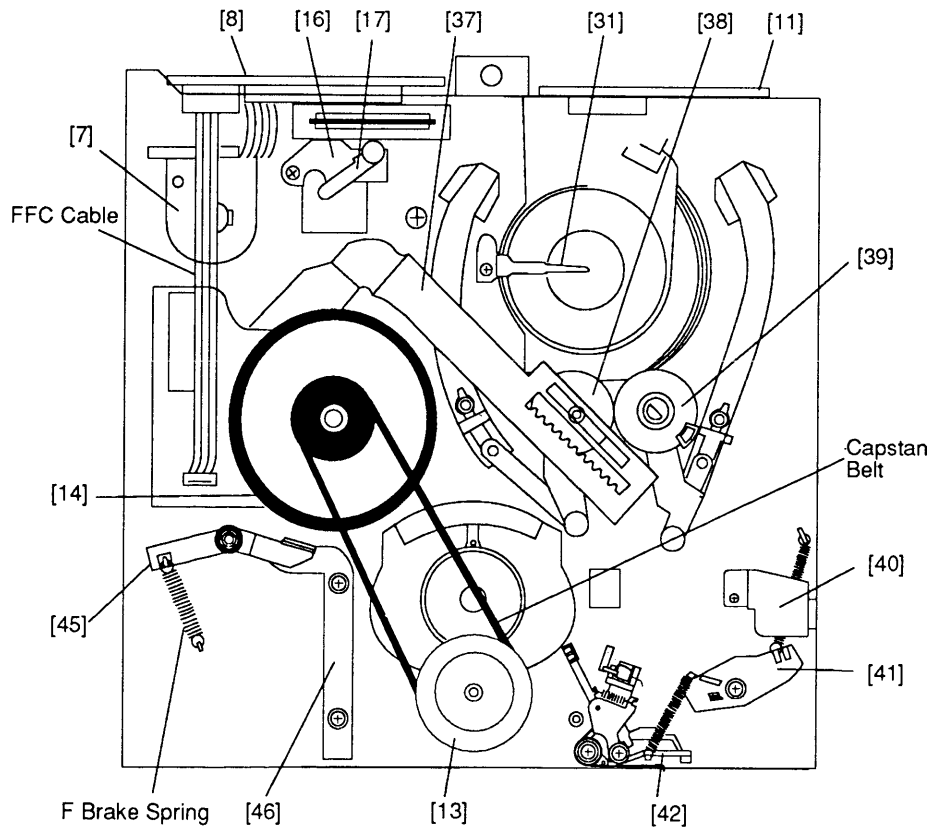


Fig. DM4

When disassembling, unhook Pinch Roller Spring as shown by the arrow. With this spring unhooked, [5] and [6] can be removed from the chassis more easily.

When reassembling [2] through [6] and [9], refer to the Alignment Section, Pg. 2-4-12.

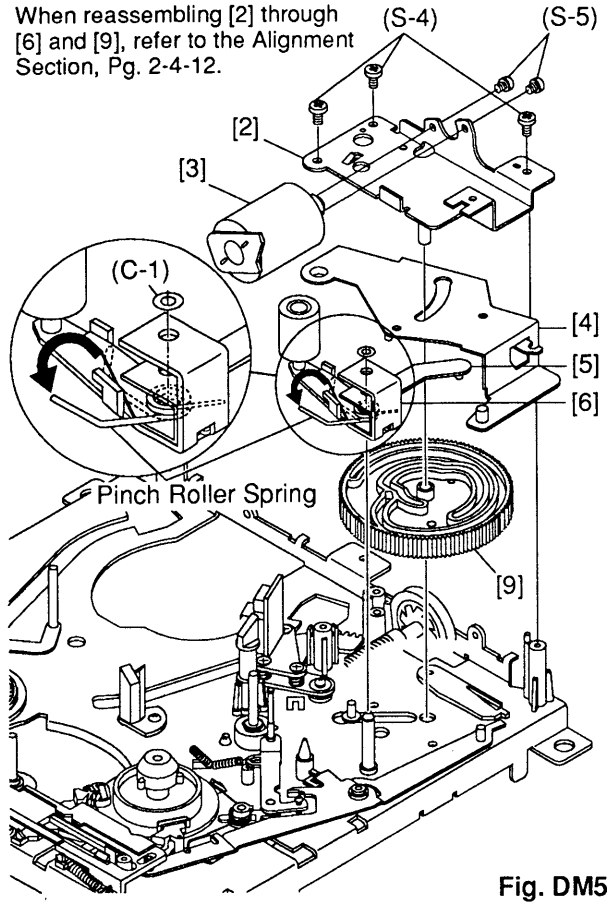


Fig. DM5

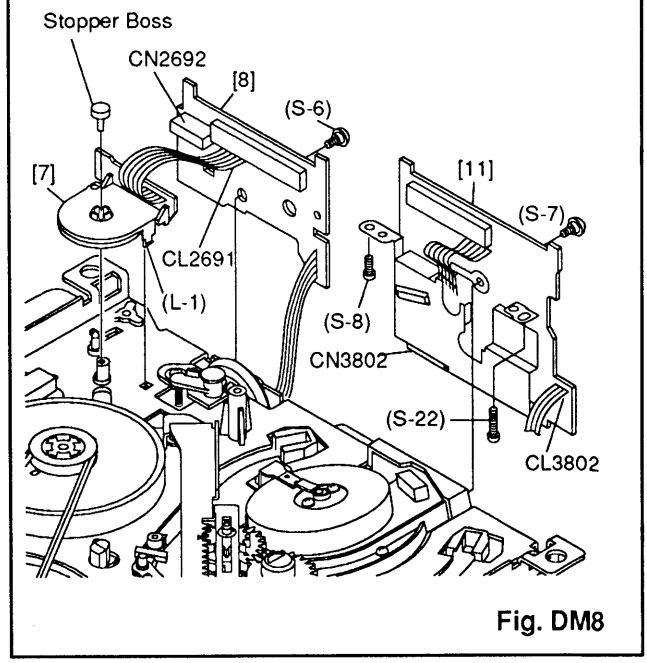


Fig. DM8

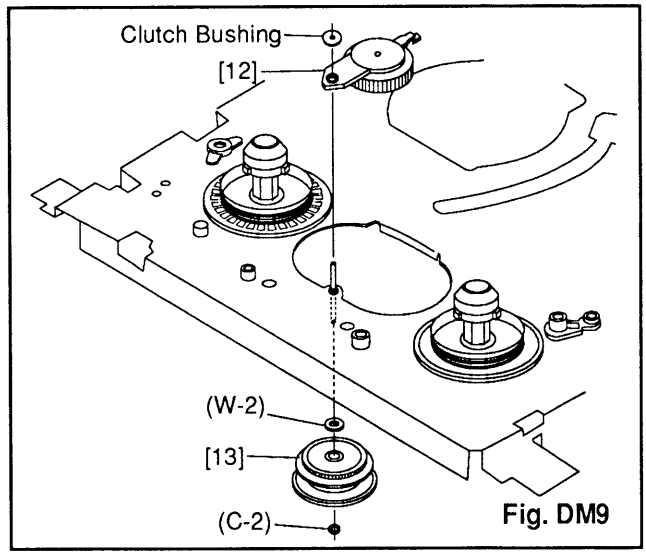
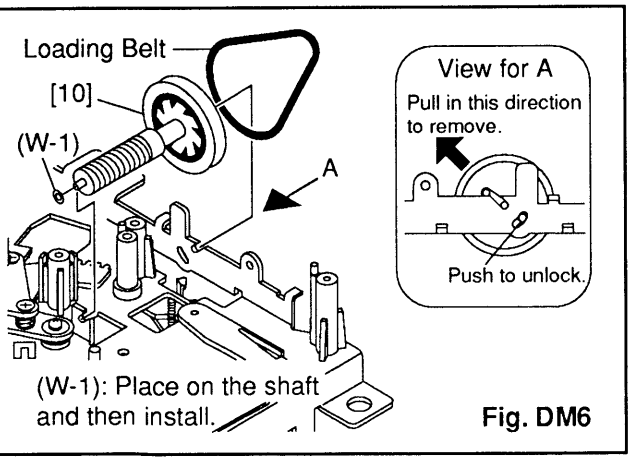


Fig. DM9



(W-1): Place on the shaft and then install.

Fig. DM6

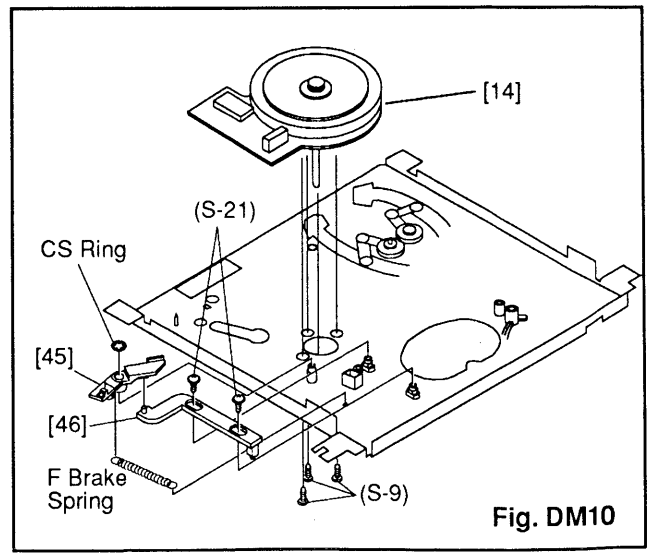


Fig. DM10

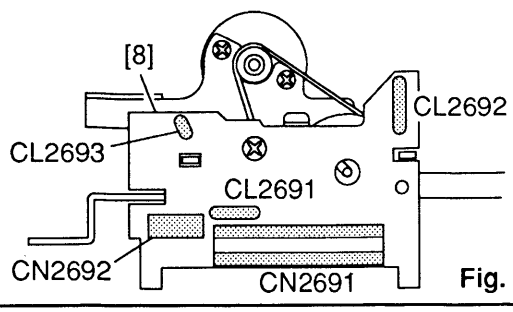


Fig. DM7

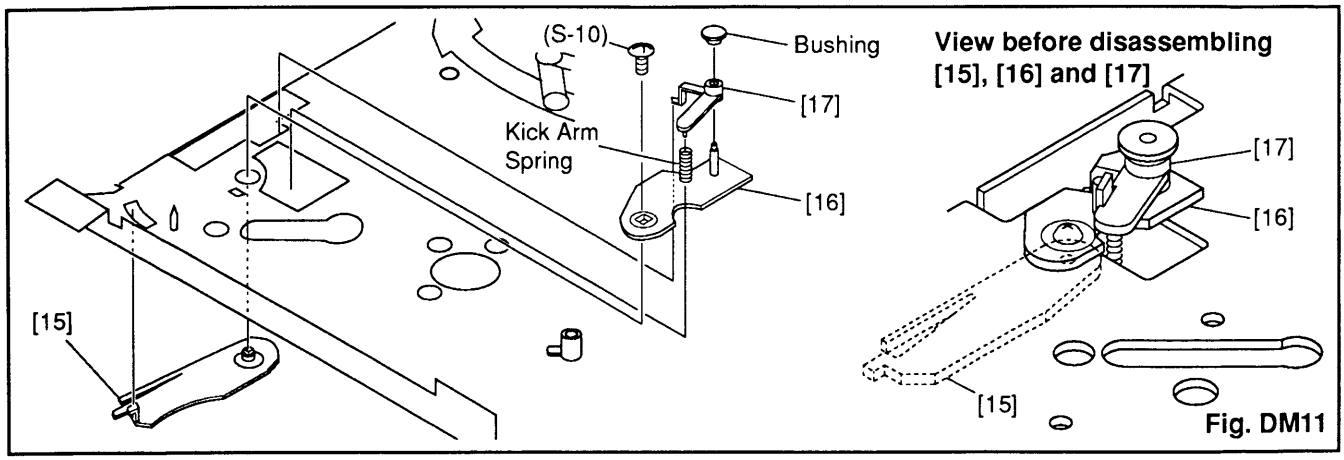


Fig. DM11

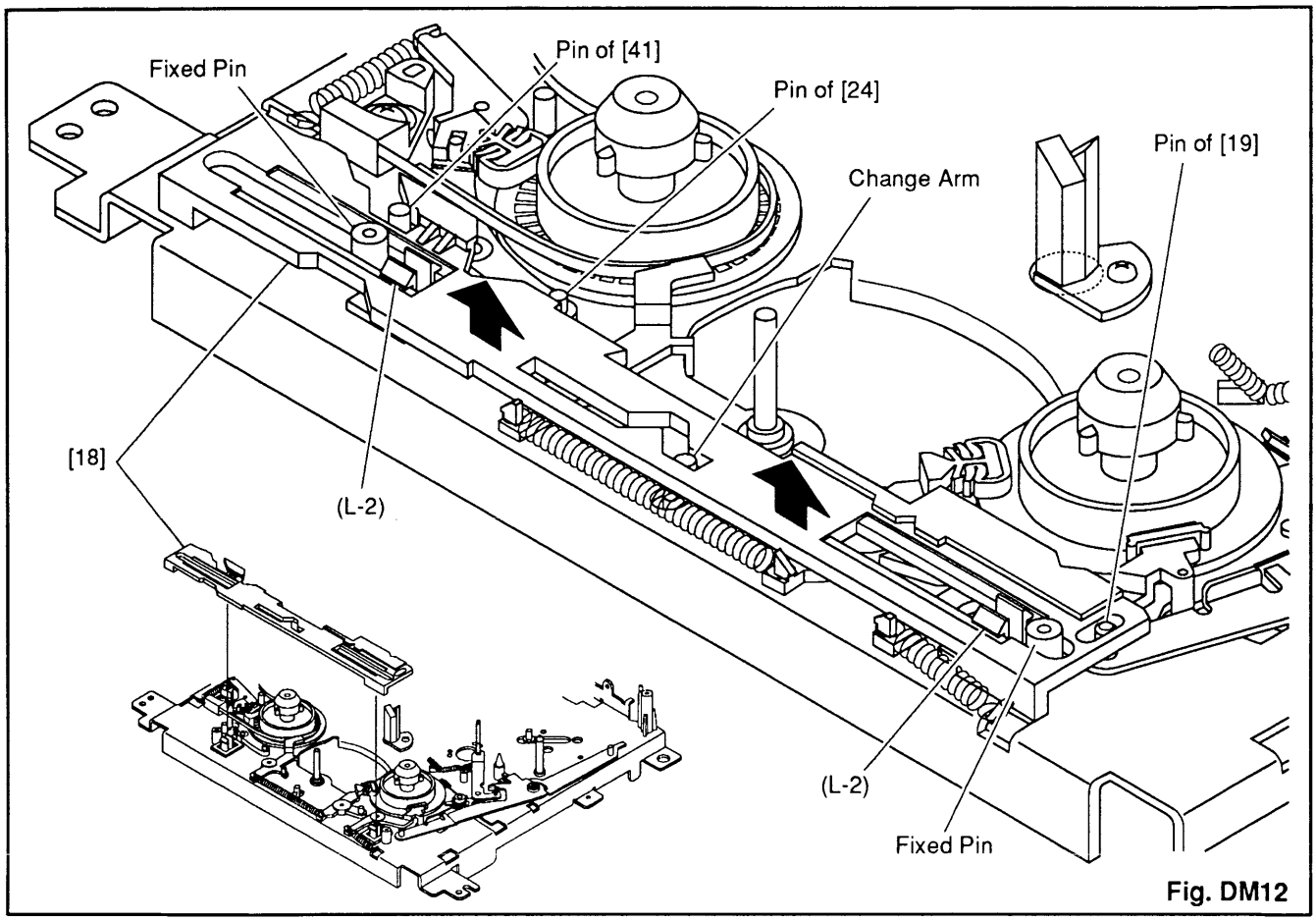


Fig. DM12

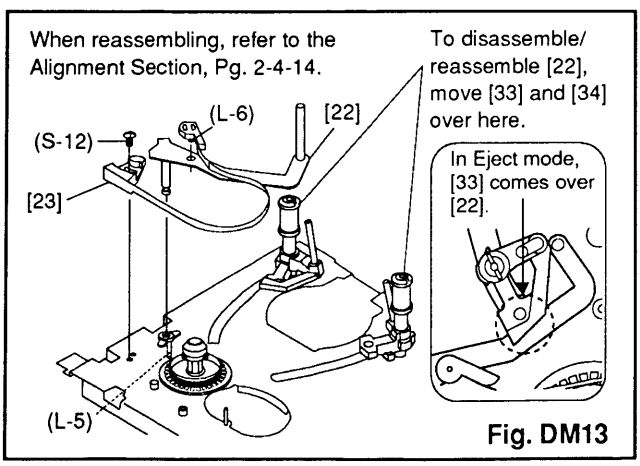


Fig. DM13

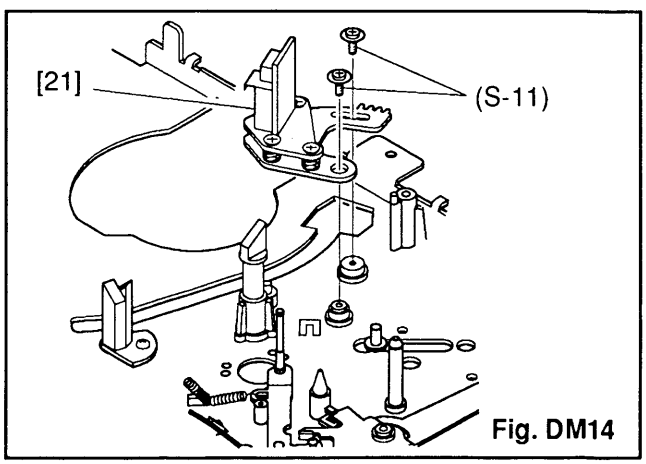


Fig. DM14

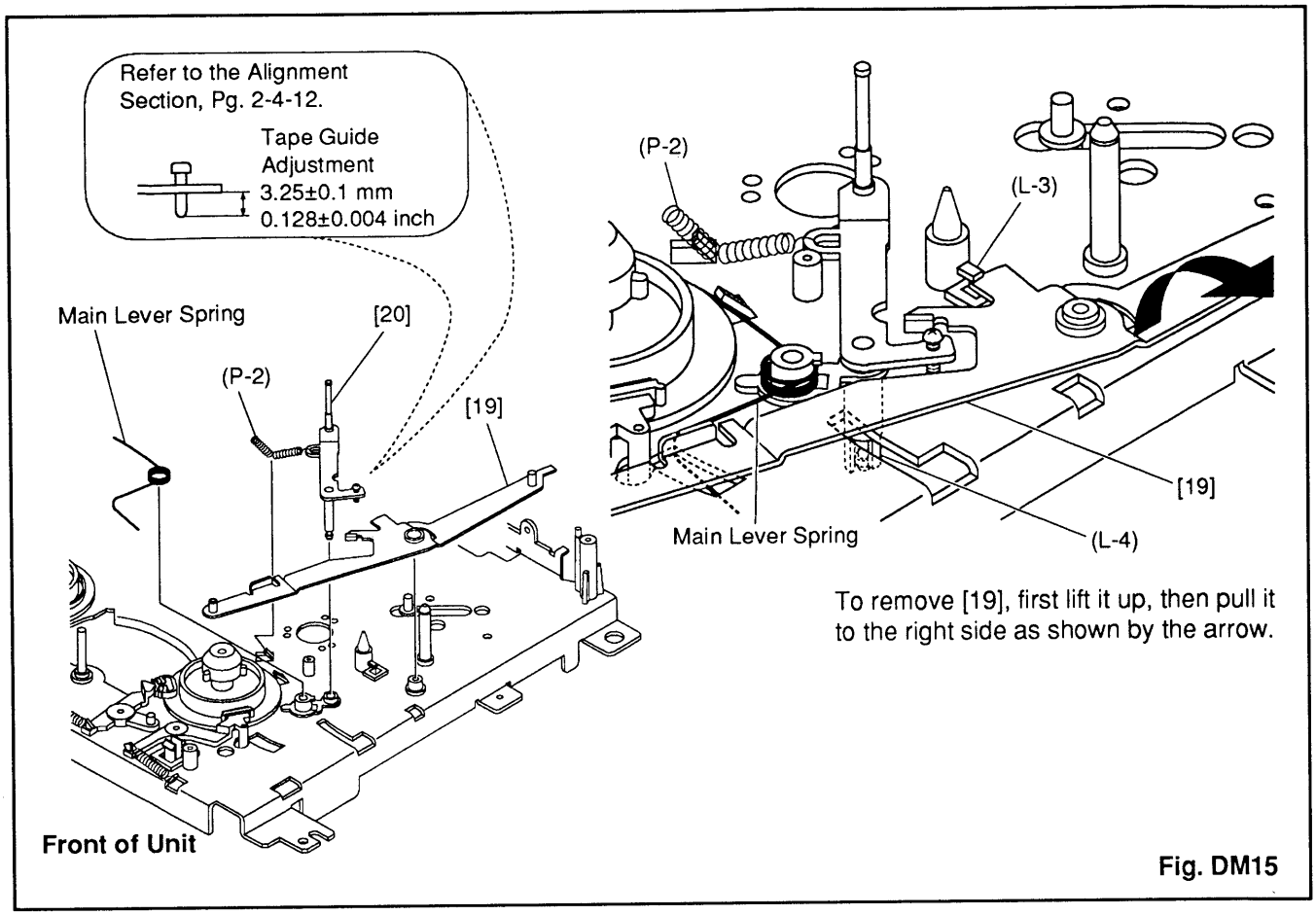


Fig. DM15

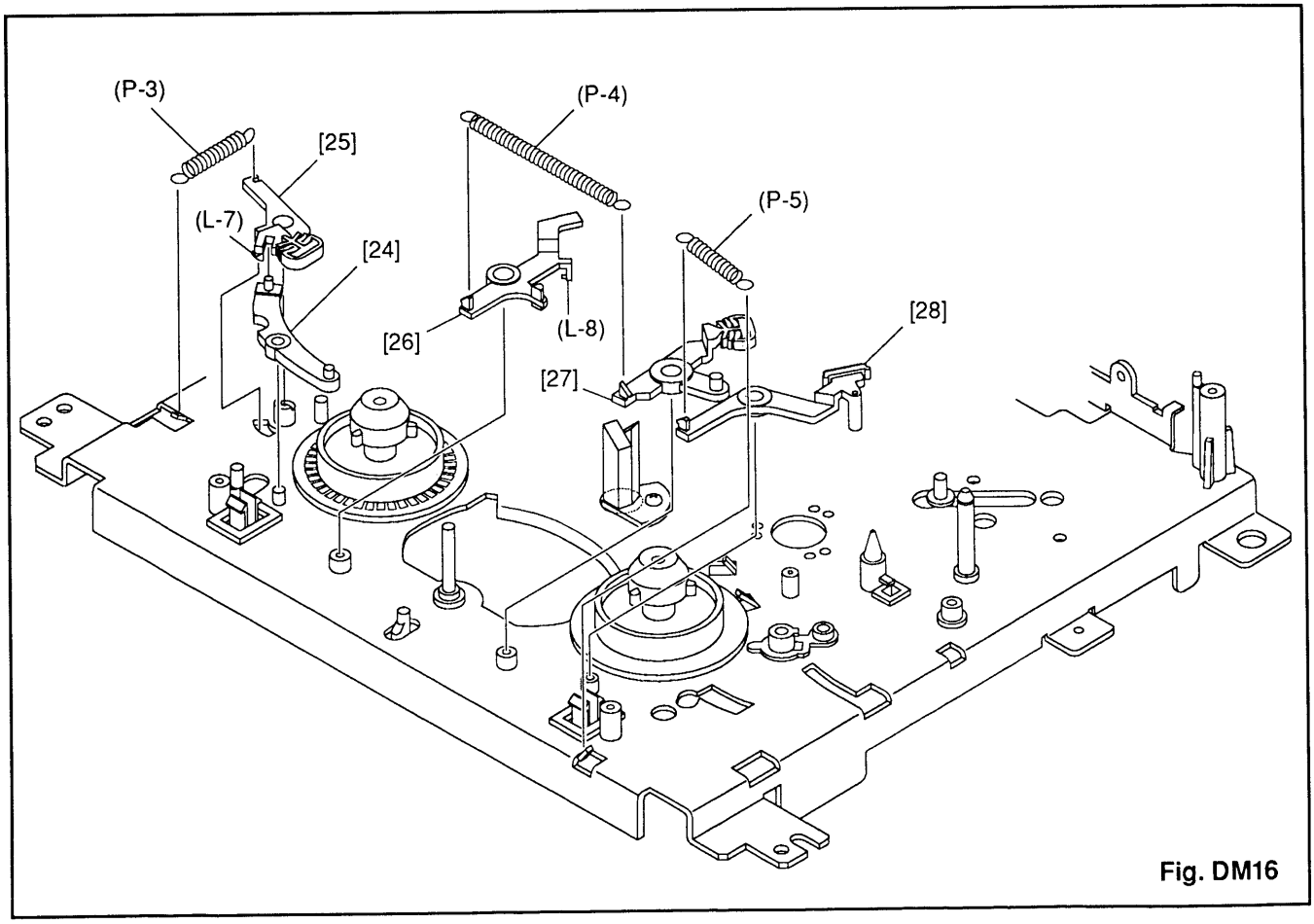
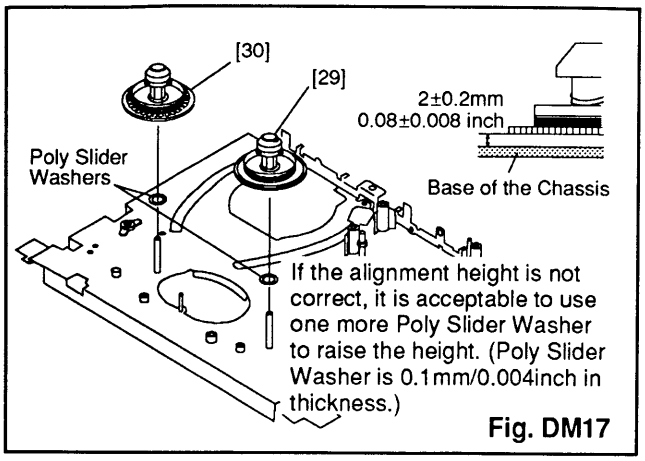


Fig. DM16


[30]
[29]
2±0.2mm
0.08±0.008 inch
Poly Slider Washers
Base of the Chassis
If the alignment height is not correct, it is acceptable to use one more Poly Slider Washer to raise the height. (Poly Slider Washer is 0.1mm/0.004inch in thickness.)
Fig. DM17

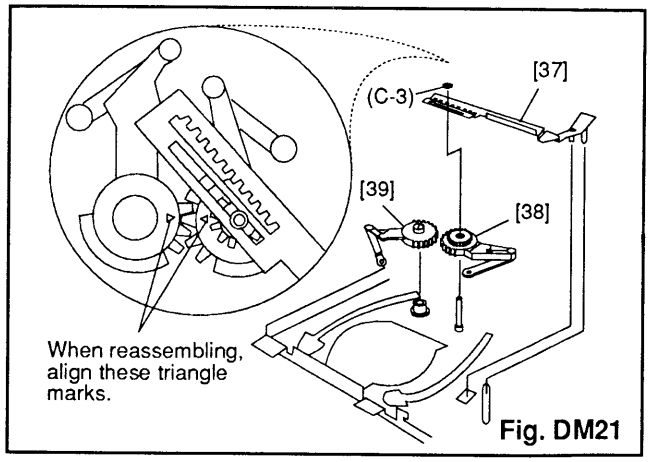


Fig. DM21

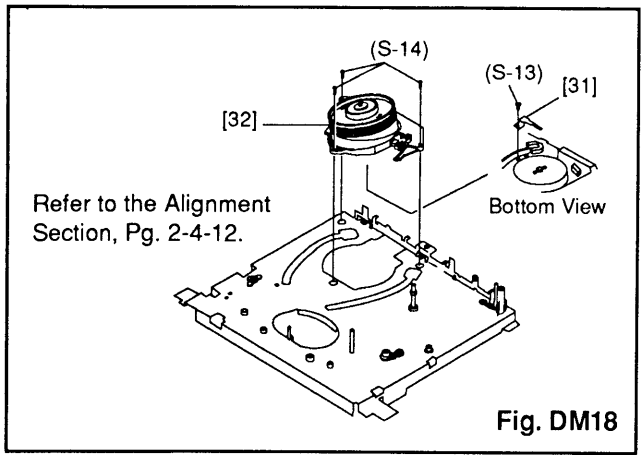


Fig. DM18

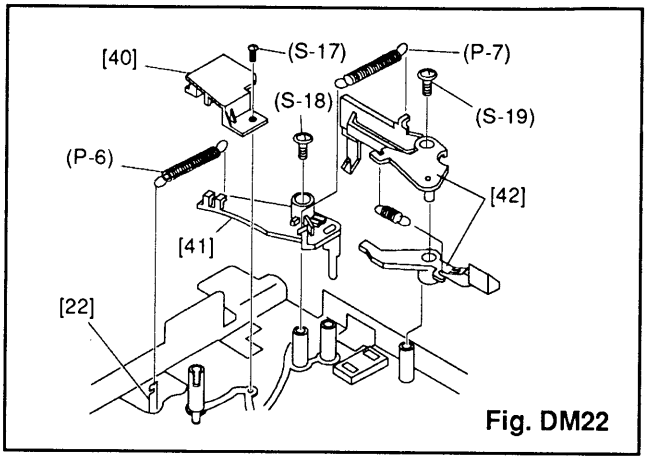


Fig. DM22

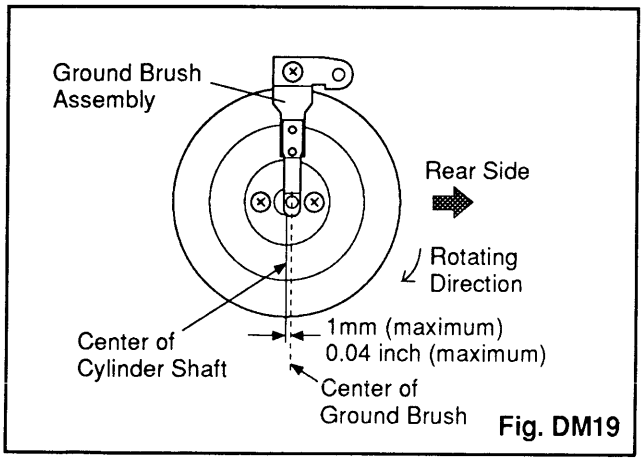


Fig. DM19

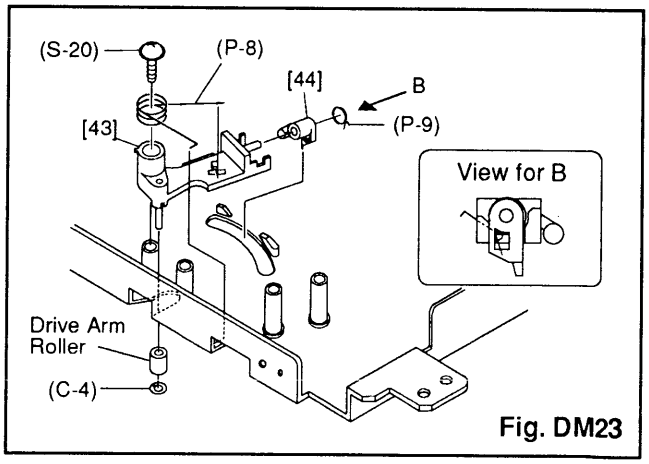


Fig. DM23

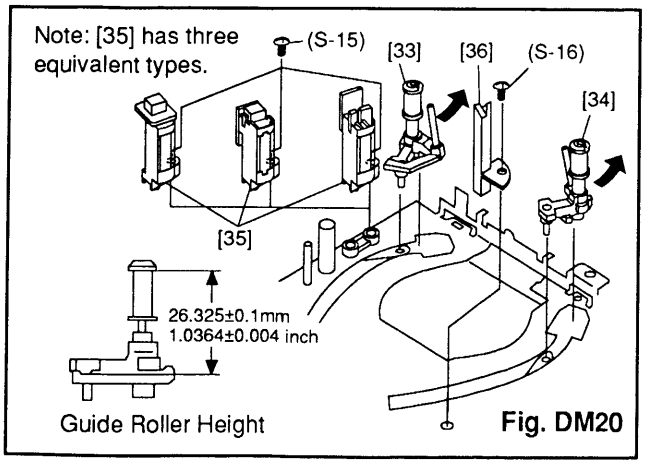


Fig. DM20

Front Loading Assembly

Before following the procedures described below, be sure to remove Front Loading Assembly from the main mechanism of the deck assembly. (See Fig. DM1.) When reassembling, start with the unit in Cassette-in mode and follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Door Opener	R	DM24 DM27	*(L-1) Door Opener Spring	(+)
*[2]	[2]	Slider Gear	R (or L)	DM28 DM30	(C-1)	(+)
*[3]	[2]	Slider Gear	L (or R)	DM28 DM30	(C-2)	(+)
		Slider Shaft	T			Install in Eject position.
[4]	[2]	Cassette Drive Gear	R	DM25 DM26 DM28	(S-1), (S-2), Cassette Drive Gear Spring	(+)
[5]	[2]	FL Rack	R	DM25 DM26 DM28		
[6]	[2]	F Door Opener R	R	DM25 DM28 DM29	*(L-2) F Door Opener R Spring	DM29
[7]	[2]	[7a] Front Guide [7b] Cassette Holder Assembly [7c] Deck Support B [7d] Deck Support F	T	DM25 DM26 DM27 DM28	4(S-3), *2(L-3)	
		[7e] Cassette Guide R	R			(+)
		[7f] Cassette Guide L	L			(+)
[8]	[8]	Gear Supporter	L	DM28	(S-4)	
[9]	[9]	Mirror Holder R	R	DM28		
[10]	[10]	Mirror Holder L	L	DM28		

① ② ③ ④ ⑤ ⑥ ⑦

①: Follow steps in sequence. When reassembling, follow the steps in reverse order. These numbers are also used as identification (location) No. of parts in the figures.

②: Indicates the part to start disassembling with in order to disassemble the part in column 1.

③: Name of the part

④: Location of the part: T=Top B=Bottom R=Right L=Left

⑤: Figure Number

⑥: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered. P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder e.g. 2(L-2) = two Locking Tabs (L-2)

⑦: Adjustment Information for Installation (+): Refer to Deck Exploded Views for lubrication.

*[2], *[3]: Slider Gear in Step [2] and that in Step [3] are identical. However, they are divided into two steps because, before reassembling Slider Shaft, one Slider Gear must be preinstalled at either end of Slider Shaft.

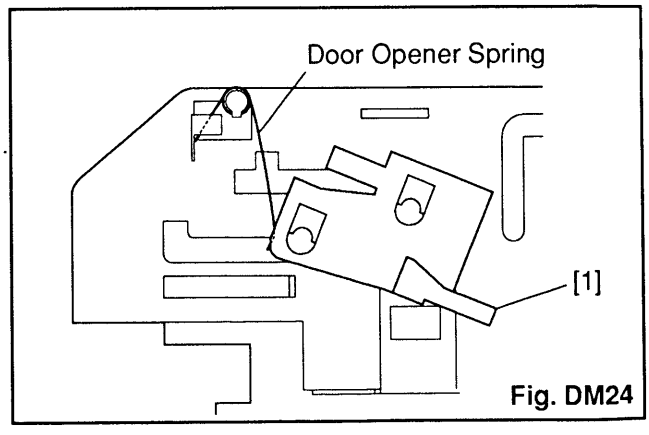


Fig. DM24

Before removing Parts [4] through [7], shift [7b] to Cassette-in position.

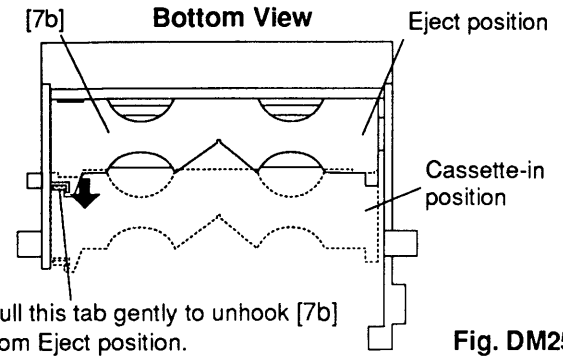


Fig. DM25

Install/remove in Cassette-in position to ensure that [7b] is in locked position.

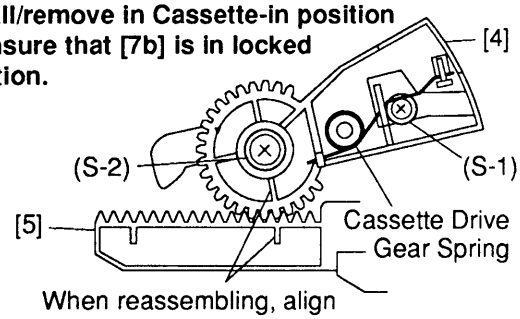


Fig. DM26

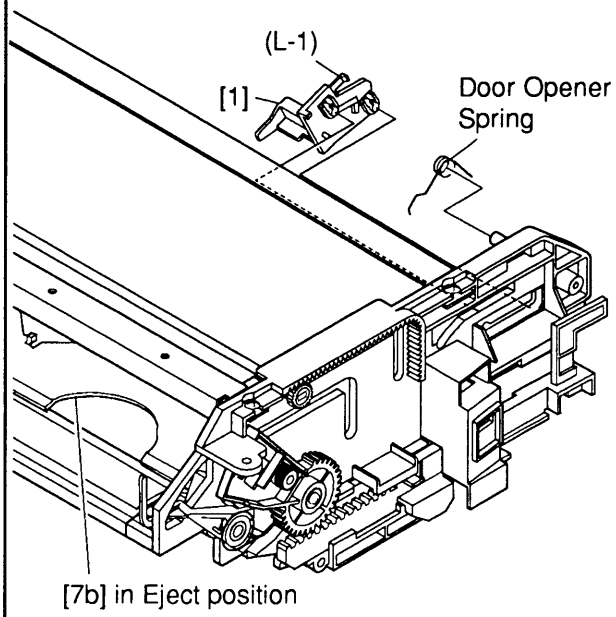


Fig. DM27

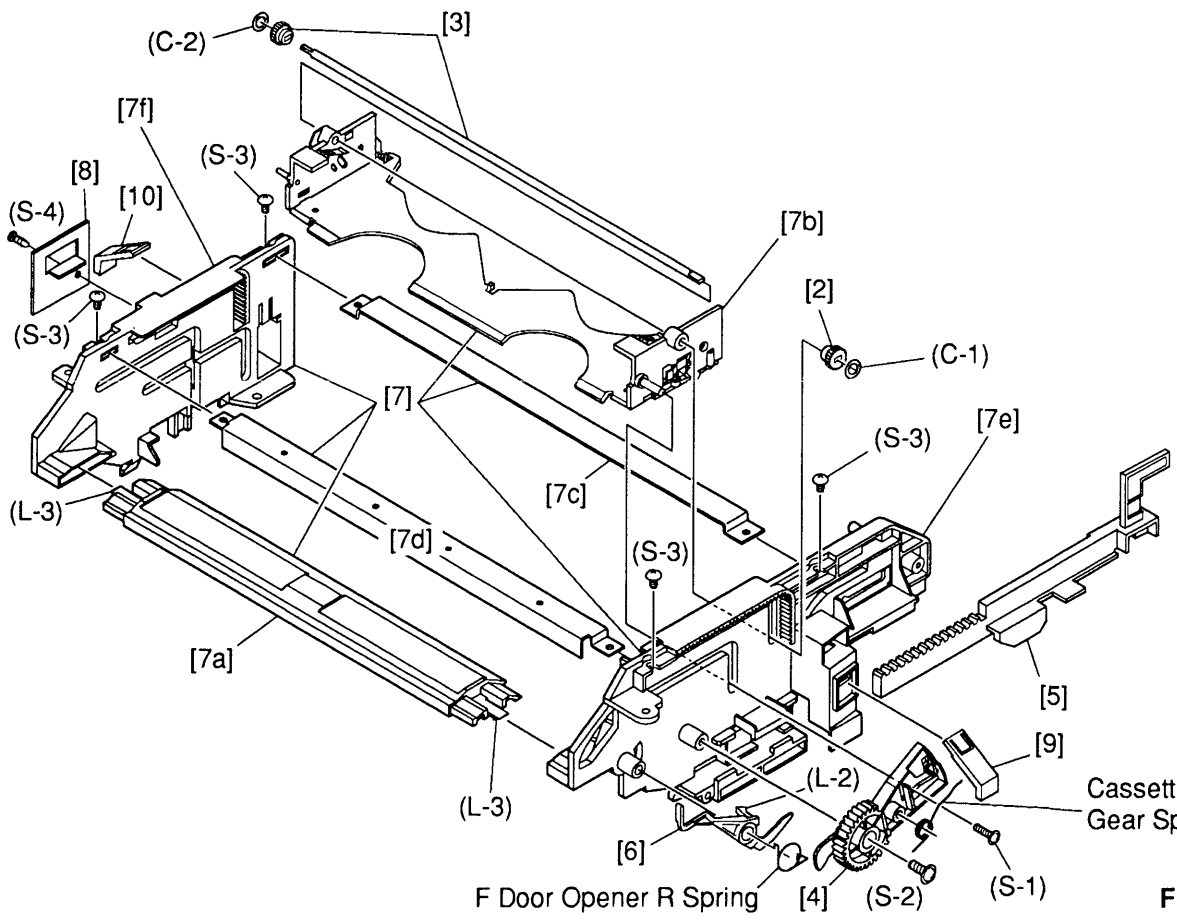
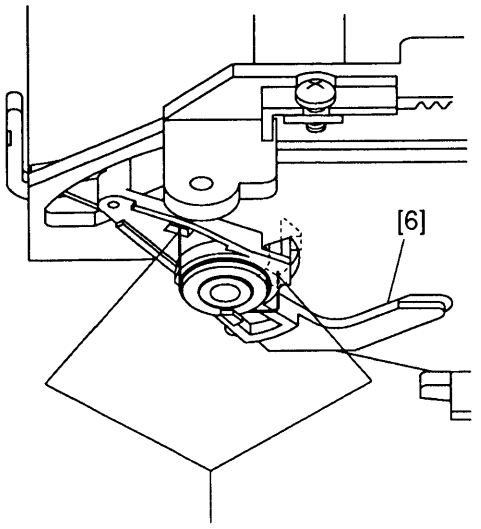
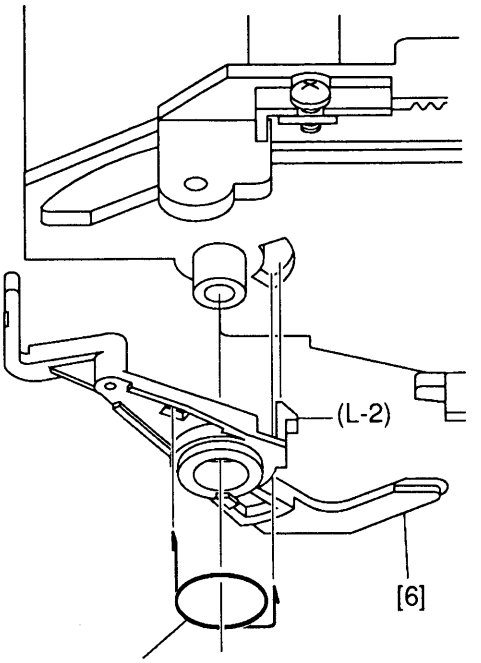


Fig. DM28

View before disassembling [6]
(F Door Opener R Spring Installation)



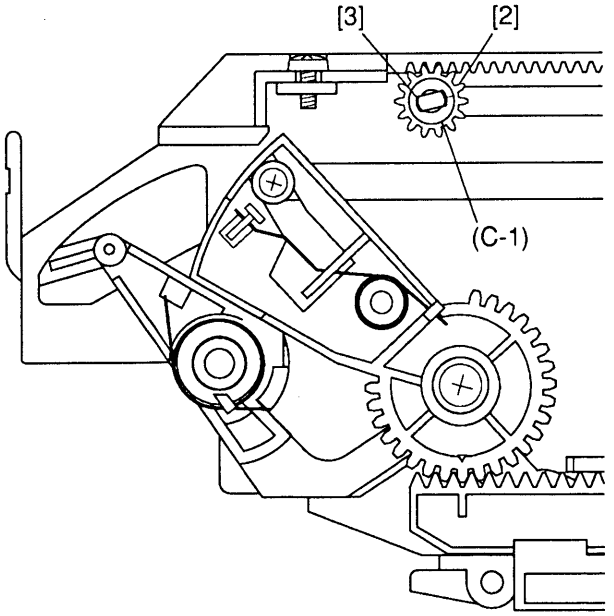
Spring must be placed in hole.



F Door Opener R Spring

Fig. DM29

View before disassembling [2] and [3]
(Installation of Slider Shaft and Slider Gear)



Install [2] and [3] in Eject position.
(When disassembling, [2] and [3] can be removed either in Eject position or Cassette-in position.)

- This figure shows where [2], [3] and other parts are in Eject position.

Fig. DM30

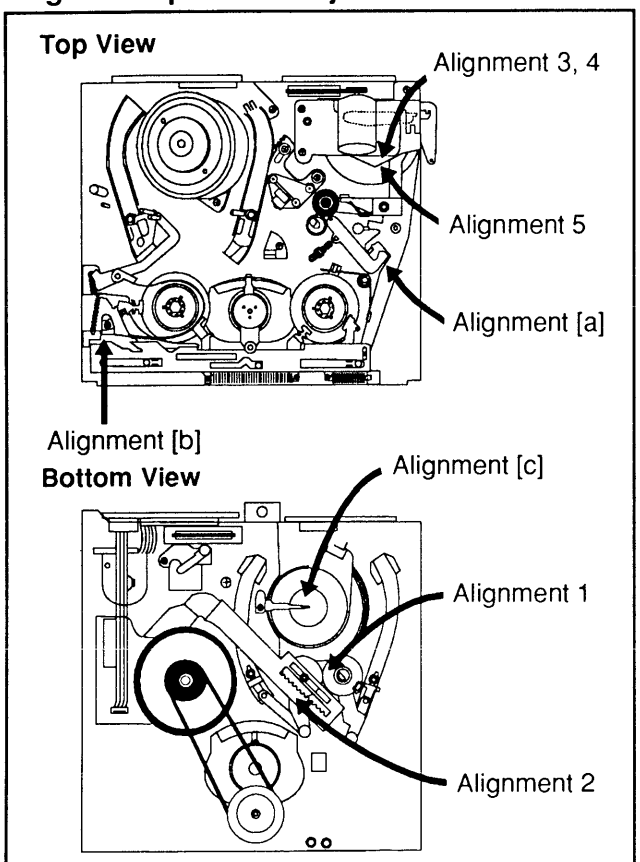
ALIGNMENT PROCEDURES OF MECHANISM

The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.
All alignments are to be performed with the mechanism in Eject mode, in the sequence given. Each procedure assumes that all previous procedures have been completed.

IMPORTANT:

If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.

Alignment points in Eject Position



Alignment [a] through [c] can be done independently of any other alignment. **Fig. AL1**

Alignment 1

Loading Gears, A and B

1. Install Loading Gears A and B so that their triangle marks point to each other as shown in Fig. AL2.

Alignment 2

Loading Arm M Assembly

1. Keeping the two triangles pointing at each other, install Loading Arm M Assembly so that its tooth with yet another triangle mark is in the position to align with Loading Gear A and the center of the shaft. See Fig. AL2.

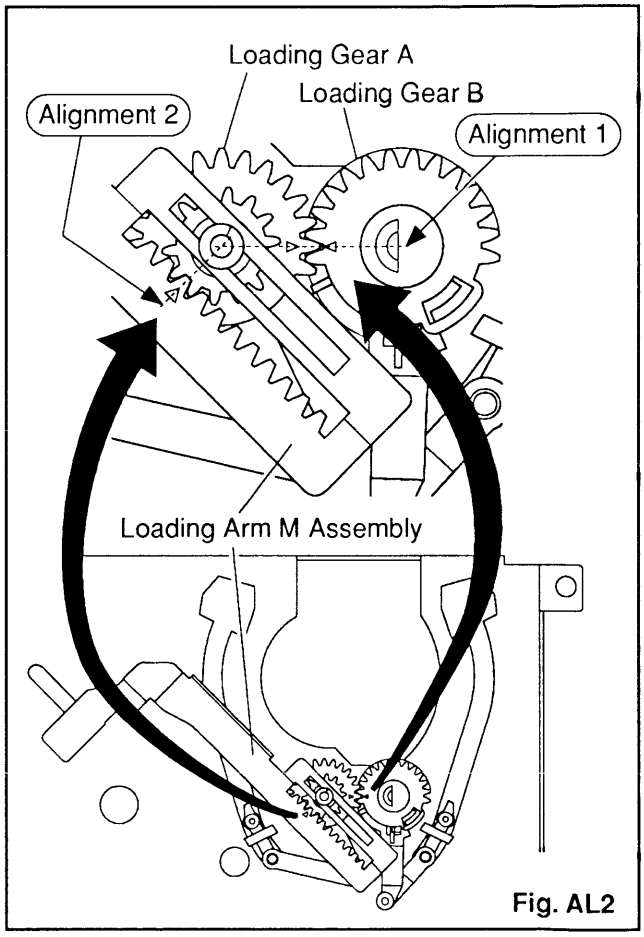


Fig. AL2

Alignment [a]

Tape Guide Assembly

1. Measurement of the black screw must be as specified in Fig. AL3.

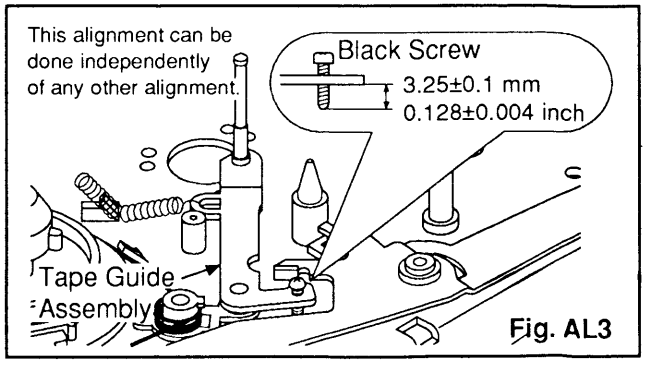


Fig. AL3

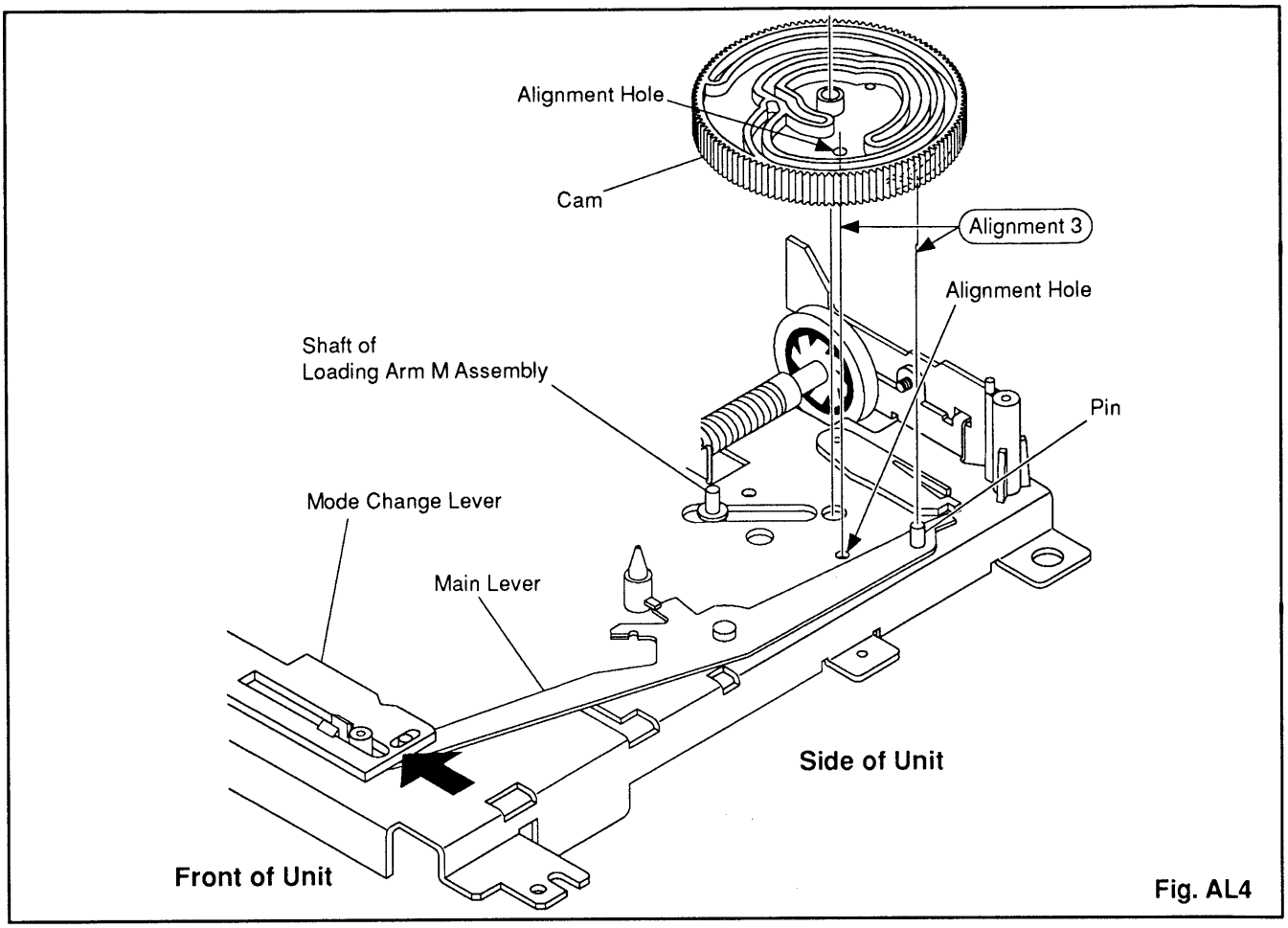


Fig. AL4

Alignment 3

Cam

1. Make sure that the mechanism is in Eject mode so that the shaft of Loading Arm M Assembly is in the position shown in Fig. AL4.
2. Align the alignment hole of the Cam with the alignment hole of the base, holding the Cam just above the base.
3. Carefully keeping these two holes aligned, install the Cam while pushing Mode Change Lever in the direction of the arrow. The Mode Change Lever must be pushed to make the pin on the Main Lever fit in the proper groove in the lower Cam.
4. After installing the Cam, make sure that the alignment hole of the Cam is still aligned with the base hole and that the pin on the Main Lever is inserted into the proper groove of the lower Cam as specified in Fig. AL4.

Alignment 4

Pinch Roller Arm Assembly

1. Ensure that the pin of the Pinch Roller Arm Assembly is positioned in the end of the groove of the upper Cam as shown in Fig. AL5.

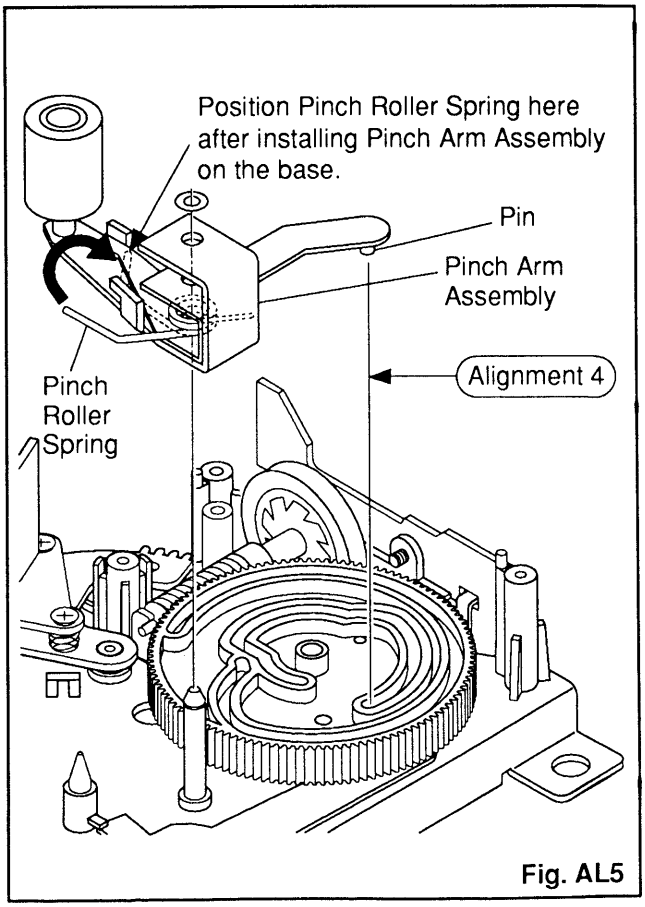


Fig. AL5

Alignment 5

Cassette Drive Lever Assembly

1. Ensure that the pin of the Cassette Drive Lever Assembly is positioned in the groove of the upper Cam as shown in Fig. AL6.

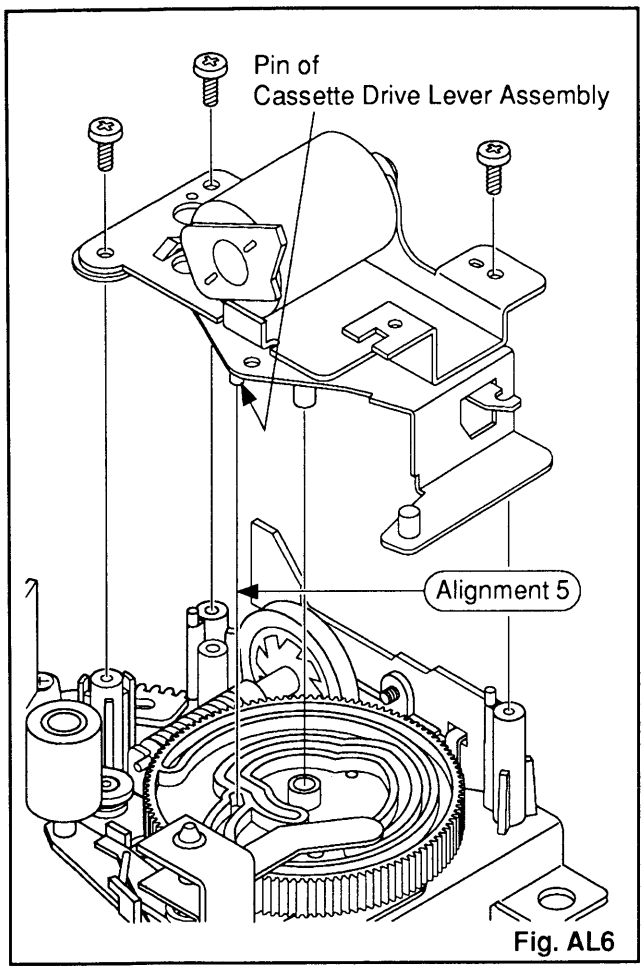


Fig. AL6

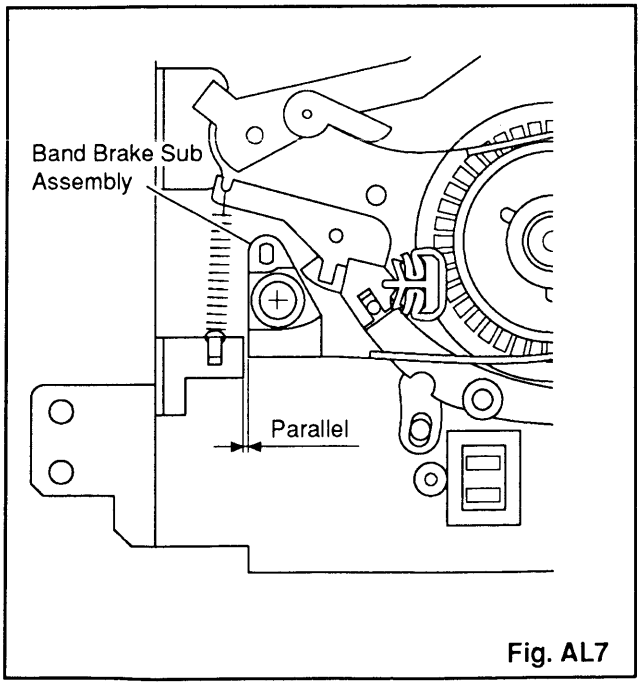


Fig. AL7

Alignment [b]

This alignment can be performed independently of any other alignment.

Band Brake Sub Assembly

1. Ensure that Band Brake Sub Assembly is positioned parallel to the chassis' notch as shown in Fig. AL7. This measurement can be made by eye.

Alignment [c]

This alignment can be performed independently of any other alignment.

Ground Brush Assembly

1. Check to see if the Ground Brush Assembly is properly set in a position equal to or just less than 1mm (0.04 inch) (but never more than 1 mm or 0.04 inch), as measured from the center of the brush to the center of the Cylinder Shaft as shown in Fig. AL8.
2. If this measurement exceeds 1mm (0.04 inch), loosen and refasten the screw of the Ground Brush Assembly. If this is not enough and further adjustment is necessary, loosen and refasten the three screws of Cylinder Assembly. These three screws are shown in Fig. DM18 in DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM.

Note: DO NOT install the Ground Brush Assembly in the opposite position (on the left side of the center of the Cylinder shaft), but always within a maximum of 1mm (0.04 inch) to the right side of the center of this shaft.

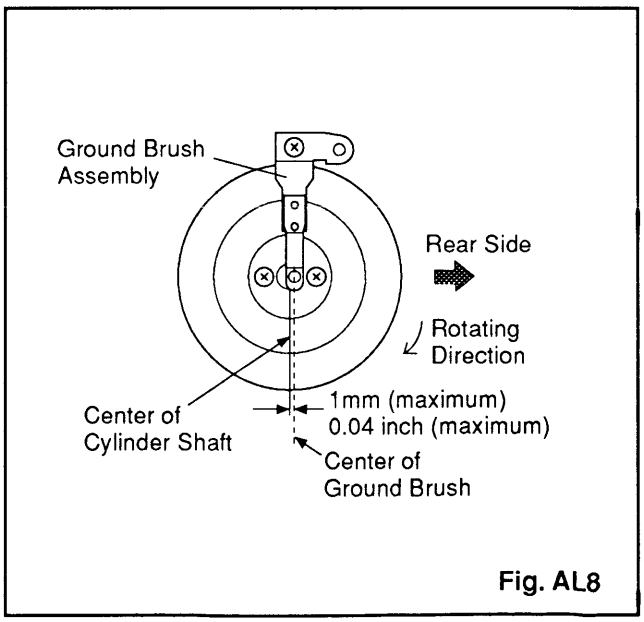


Fig. AL8

EXPLODED VIEWS AND PARTS LIST SECTION

VIDEO CASSETTE RECORDER

VT-MX411A / VT-MX411AC / VT-MX411C / VT-FX600A / VT-FX600AC / VT-FX600C

EXPLODED VIEWS AND PARTS LIST SECTION

- **Exploded views**
- **Parts List**

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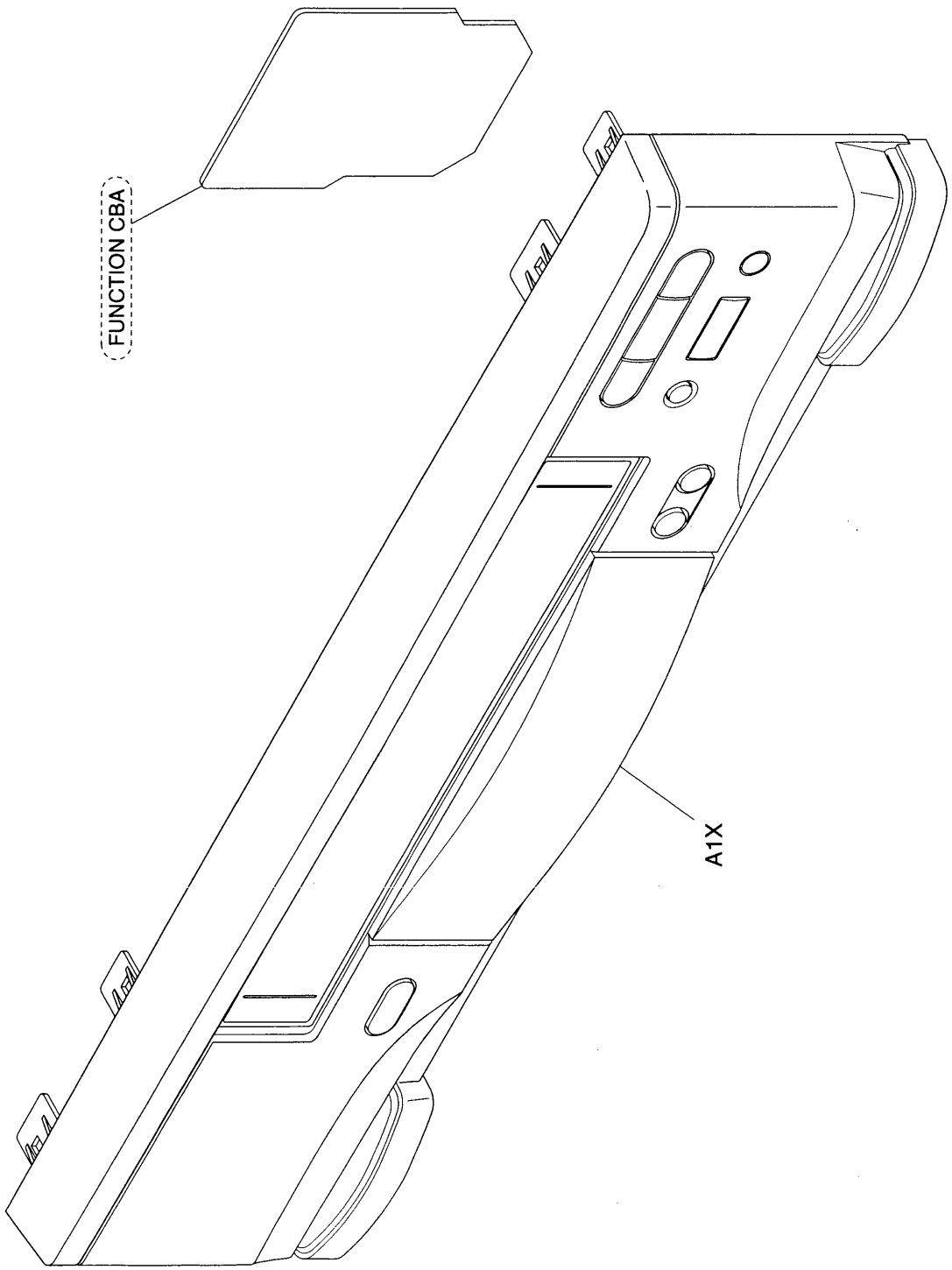
Exploded Views 3-1-1
Mechanical Parts List 3-2-1
Electrical Parts List 3-3-1

EXPLODED VIEWS

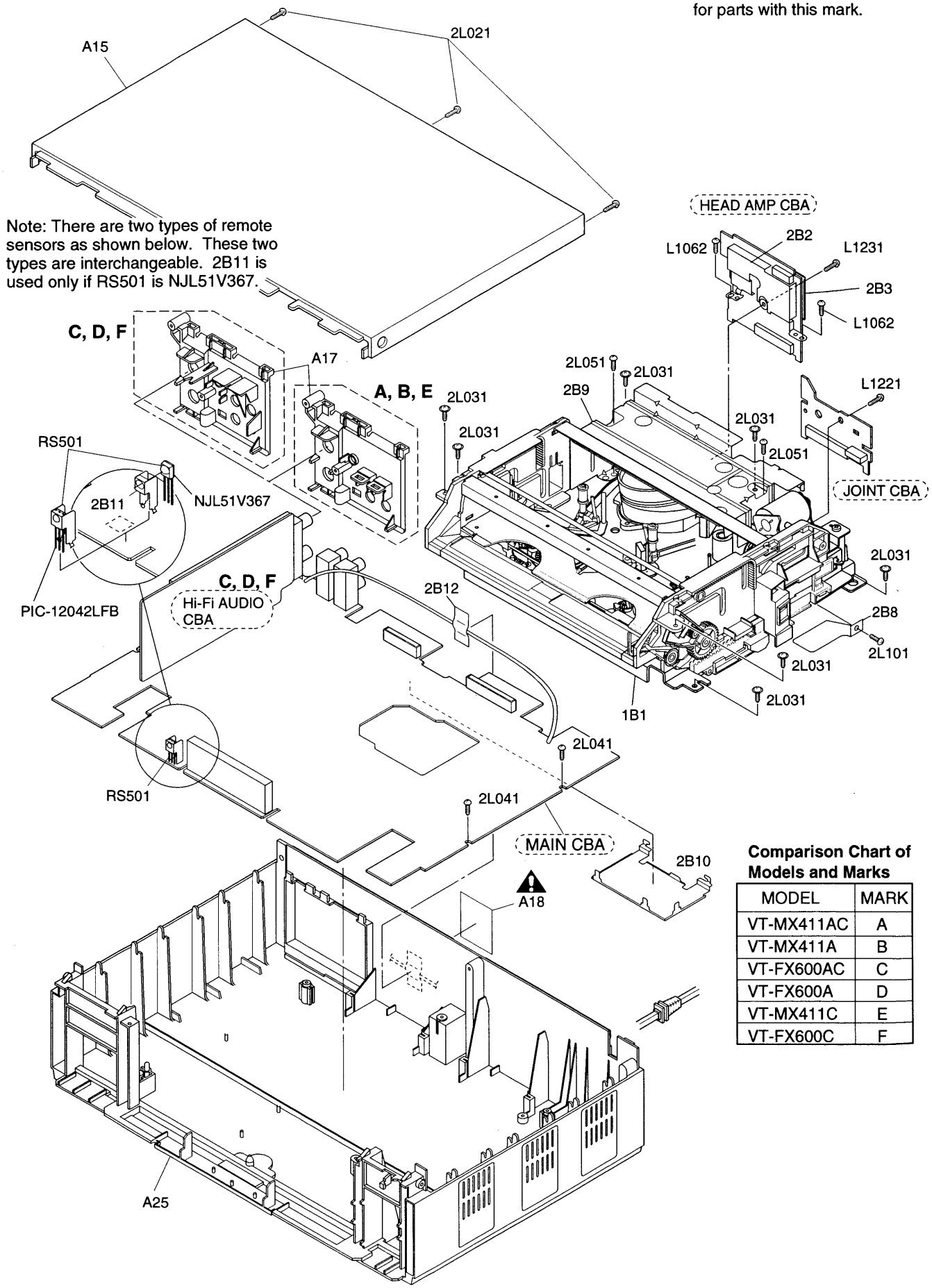
Front Panel

See Electrical Parts List for parts with this mark.



Cabinet

See Electrical Parts List for parts with this mark.



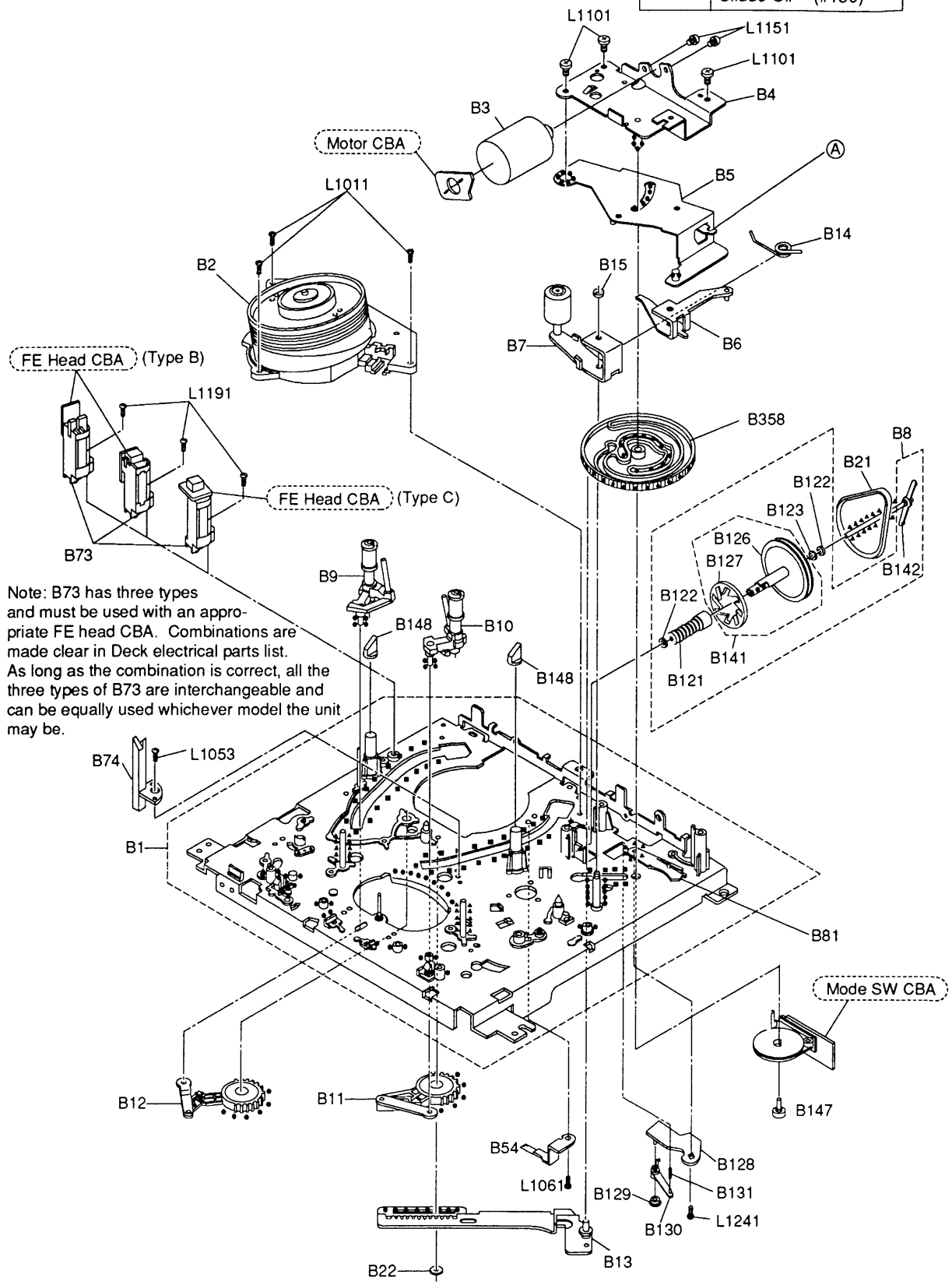
Comparison Chart of Models and Marks

MODEL	MARK
VT-MX411AC	A
VT-MX411A	B
VT-FX600AC	C
VT-FX600A	D
VT-MX411C	E
VT-FX600C	F

DECK EXPLODED VIEWS

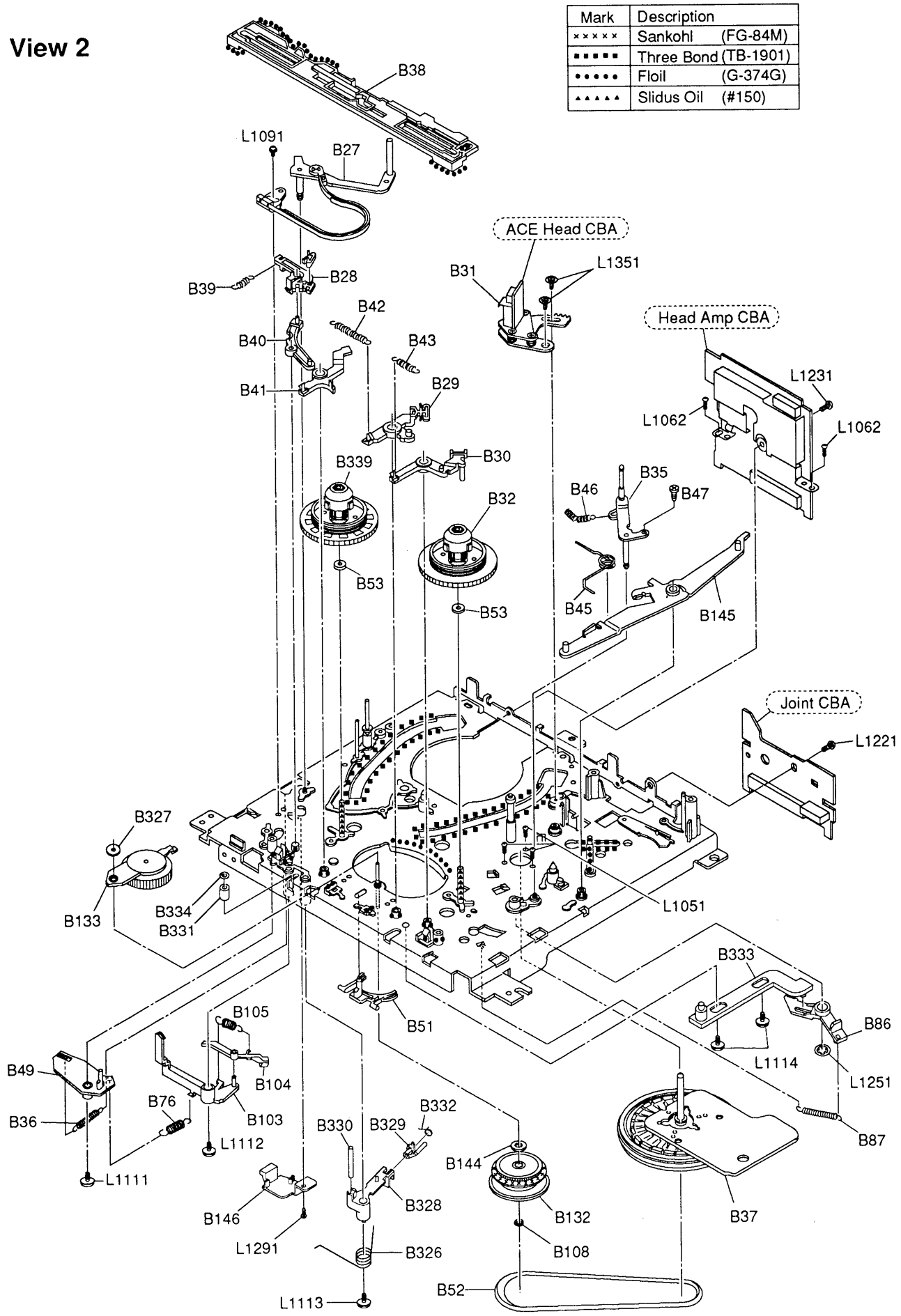
View 1

Mark	Description
×××××	Sankohl (FG-84M)
■■■■■	Three Bond (TB-1901)
●●●●●	Floil (G-374G)
▲▲▲▲▲	Slidus Oil (#150)

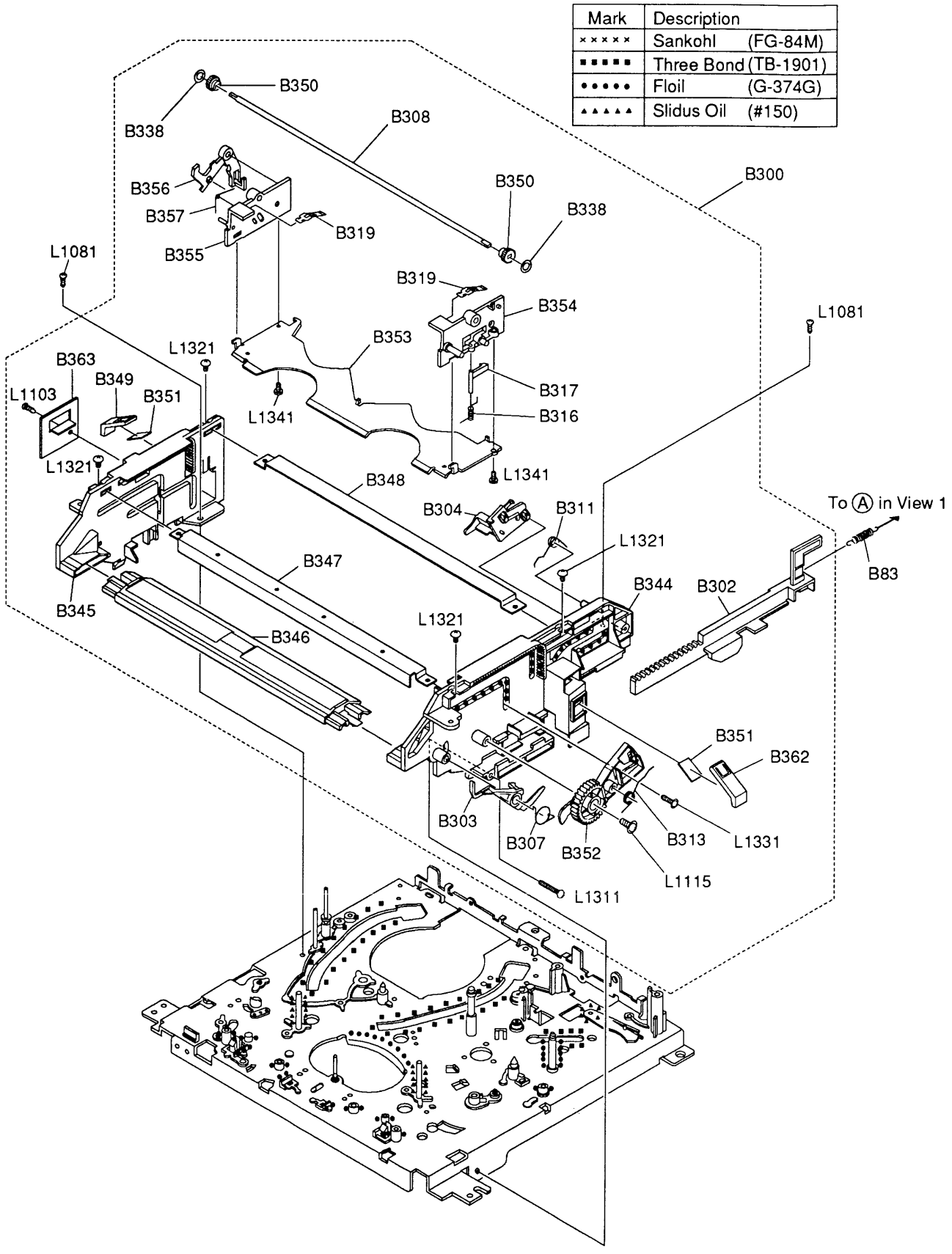


View 2

Mark	Description
×××××	Sankohl (FG-84M)
▪▪▪▪▪	Three Bond (TB-1901)
•••••	Floil (G-374G)
▲▲▲▲▲	Slidus Oil (#150)



View 3


Mark | Description
××××× Sankohl (FG-84M)
■■■■■ Three Bond (TB-1901)
●●●●● Floil (G-374G)
▲▲▲▲▲ Slidus Oil (#150)
B350
B338
B308
B356
B357
B355
B319
B350
B338
B300
L1081
B319
B354
L1081
B353
L1321
B363
B349
B351
L1103
L1341
B317
B316
L1321
L1341
B348
B304
B311
To Ⓐ in View 1
L1321
B347
B83
B344
B302
B345
L1321
B346
B351
B362
B303
B307
B352
B313
L1331
L1115
L1311

MECHANICAL PARTS LIST

(VT-MX411A/MX411AC/MX411C Model only)

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
2B 2	TJ13051	SHIELD, TOP
2B 3	TJ13052	SHIELD, BOTTOM
2B 8	TJ12538	COVER
2B 9	TJ13031	PLATE, SHIELD
2B 10	TE11943	SHIELD, AUDIO
2B 11	TE11944	HOLDER, IF SENSOR
2L021	TJ12534	SCREW(3X12)
2L031	TJ10119	SCREW(3X10)
2L041	TJ12535	SCREW(3X8)
2L051	TJ12536	SCREW(M3X5)
2L101	TJ12537	SCREW(3X4)
A 15	TJ13029	CASE, TOP
A 17	TE11989	JACK BOARD
A 25	TJ13042	FRAME, ASSY
A1X	TJ13061	PANEL, FRONT
⚠AC 01	TE11946	AC CORD
B 2	TE11975	CYLINDER, ASSY
B 3	TE11927	MOTOR, LOADING
B 3	TE11974	MOTOR, LOADING PREPARATION
B 4	TE11959	HOLDER, MOTOR
B 5	TJ12584	LEVER, CASSETTE
B 6	TJ10145	ARM
B 7	TJ10183	ARM, PRESURE ROLLER
B 8	TJ10147	PULLEY
B 9	TJ12993	GUIDE, MOVING(S)
B 10	TJ12994	GUIDE, MOVING(T)
B 11	TJ10151	ARM, LOADING(T)
B 12	TJ10152	ARM, LOADING(B)
B 13	TJ10153	ARM, LOADING(M)
B 14	TJ12995	SPRING, PINCH ROLLER
B 15	TJ10155	WASHER
B 21	TJ10157	BELT
B 22	TJ10158	WASHER
B 27	TJ10201	BAND, TENSION
B 28	TJ10202	BRAKE(S)
B 29	TJ10203	BRAKE(T)
B 30	TJ10204	ARM, BRAKE(T)
B 31	TJ12611	HEAD, AUDIO CONTROL
B 32	TJ10206	REEL DISK
B 35	TJ10208	GUIDE, TAPE
B 36	TJ10209	SPRING
B 37	TJ10211	MOTOR, CAPSTAN
B 38	TJ12612	LEVER, CHANGE MODE
B 39	TJ10213	SPRING
B 40	TE13053	LEVEL, BRAKE(S)
B 41	TJ10215	ARM, BRAKE(S)
B 42	TJ12996	BRAKE, T
B 43	TJ12613	SPRING JOG
B 45	TJ12997	SPRING, LEVER
B 46	TJ10221	SPRING
B 47	TJ10222	SCREW
B 49	TJ10224	ARM
B 51	TJ10226	ARM
B 52	TJ13039	BELT, CAPSTAN
B 53	TJ10228	WASHER
B 54	TJ10161	BRUSH
B 73	TE11971	HEAD, FE
B 74	TJ13017	LUMINESCENCE PRISM
B 76	TJ13018	SPRING, REC ARM
B 81	TJ13019	HOLDER, LEVER
B 83	TJ13041	SPRING, B
B 84	TE11972	HEAD, FE
B 86	TJ13054	BRAKE ASSEMBLY
B 87	TJ13055	SPRING
B103	TJ13021	ARM, REC(A)
B104	TJ13022	ARM, REC(B)
B105	TJ12621	SPRING
B108	TJ10228	WASHER
B121	TJ13637	WORM
B122	TJ10165	WASHER
B123	TJ10166	WASHER
B126	TJ10185	PULLEY
B127	TJ10186	FELT, PULLEY
B128	TJ10167	HOLDER
B129	TJ13023	BUSH, PRESS FIT
B130	TJ13024	ARM, KICK
B131	TJ13025	SPRING, KICK ARM
B132	TJ10231	CLUTCH
B133	TJ12622	ARM IDLER ASSY
B141	TJ10172	PULLEY
B142	TJ10173	SHAFT LOCK
B144	TJ10234	WASHER
B145	TJ12623	LEVER, MAIN
B146	TJ10187	HOLDER, SPRING
B147	TJ10188	STOPPER
B148	TJ13026	CAP, TG
B300	TJ13027	FL ASSY
B302	TJ12852	RACK
B303	TJ12653	DOOR OPENER
B304	TJ12999	DOOR, OPENER
B307	TJ12654	DOOR OPENER
B308	TJ13001	SHAFT, SLIDER
B311	TJ12656	DOOR OPENER
B313	TJ12657	GEAR, DRIVE
B316	TJ12658	SPRING
B317	TJ12659	ARM, LOCK
B319	TJ12661	SPRING
B326	TJ13056	ARM DRIVE
B327	TJ12625	BUSH CLUCH
B328	TJ13003	ARM, REEL DRIVE
B329	TJ12627	ARM, HOLDER KICK
B330	TJ12628	SHAFT, DRIVE ARM
B331	TJ12629	ROLLER, DRIVE ARM
B332	TJ13004	HOLDER, ARM SPRING
B333	TJ13057	GUIDE BRAKE
B334	TJ12633	SCREW
B338	TJ12662	WASHER
B339	TJ12634	REEL BASE
B344	TJ12663	GUIDE, CASSETTE
B345	TJ13005	GUIDE, CASSETTE(L)
B346	TJ12655	SHAFT, SLIDER
B347	TJ13006	DECKANGLE, F
B348	TJ13007	DECKANGLE, B
B349	TJ13008	HOLDER, MIRROR(L)
B350	TJ12671	GEAR, SLIDER
B351	TJ13009	MIRROR
B352	TJ13038	GEAR, CASSETTE DRIVE
B353	TJ13011	PLATE, CASSETTE
B354	TJ12676	SLIDER
B355	TJ12677	SLIDER
B356	TJ12678	LEVER, LOCK
B357	TJ12679	LEVER, LOCK
B358	TJ13012	CAM
B362	TJ13013	HOLDER, MIRROR(R)
B363	TJ12682	SUPPOTER, GEAR
L1011	TJ10174	SCREW (M3X9)
L1051	TJ12636	SCREW(M2.6X6)

SYMBOL-NO	P-NO	DESCRIPTION
L1053	TJ10175	SCREW (M2.6X6)
L1061	TJ10182	SCREW (M2X2.8)
L1062	TJ13014	SCREW(M2.6X8)
L1081	TJ10176	SCREW (3X6)
L1091	TJ10235	SCREW (M3X6)
L1101	TJ10177	SCREW (3X8)
L1103	TJ10177	SCREW (3X8)
L1111	TJ13015	SCREW(3X8)
L1112	TJ13015	SCREW(3X8)
L1113	TJ13015	SCREW(3X8)
L1114	TJ13015	SCREW(3X8)
L1115	TJ13015	SCREW(3X8)
L1151	TJ10178	SCREW (M3X4)
L1191	TJ13016	SCREW(M2.6X12)
L1221	TJ10238	SCREW
L1231	TJ10239	SCREW
L1241	TJ10179	SCREW (M2X6)
L1251	TJ10189	SCREW(M2.6X6)
L1291	TJ12684	SCREW(M3X18)
L1311	TJ12685	SCREW(M3X5)
L1321	TJ12686	SCREW(M2.6X12)
L1331	TJ12687	SCREW(M2.6X8)
L1341	TJ12638	SCREW(M2.6X6)
L1351	TE11921	PWB ASSY JNT

FOR ACCESSARIES

RS501	TE11954	REMOTE CONTROL UNIT
X 1	HL10472	REMOCON BOX
X 3	5857952	RF CABLE

SYMBOL-NO	P-NO	DESCRIPTION

MECHANICAL PARTS LIST

(VT-FX600A/FX600AC/FX600C Model only)

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
2B 2	TJ13051	SHIELD, TOP
2B 3	TJ13052	SHIELD, BOTTOM
2B 8	TJ12538	COVER
2B 9	TJ13031	PLATE, SHIELD
2B 10	TE11943	SHIELD, AUDIO
2B 11	TE11944	HOLDER, IF SENSOR
2L021	TJ12534	SCREW(3X12)
2L031	TJ10119	SCREW(3X10)
2L041	TJ12535	SCREW(3X8)
2L051	TJ12536	SCREW(M3X5)
2L101	TJ12537	SCREW(3X4)
A 15	TJ13029	CASE, TOP
A 17	TE11989	JACK BOARD
A 25	TJ13042	FRAME, ASSY
A1X	TJ13062	PANEL, FRONT
⚠AC 01	TE11946	AC CORD
B 2	TE11976	CYLINDER, ASSY
B 3	TE11927	MOTOR, LOADING
B 3	TE11974	MOTOR, LOADING PREPARATION
B 4	TE11959	HOLDER, MOTOR
B 5	TJ12584	LEVER, CASSETTE
B 6	TJ10145	ARM
B 7	TJ10183	ARM, PRESURE ROLLER
B 8	TJ10147	PULLEY
B 9	TJ12993	GUIDE, MOVING(S)
B 10	TJ12994	GUIDE, MOVING(T)
B 11	TJ10151	ARM, LOADING(T)
B 12	TJ10152	ARM, LOADING(B)
B 13	TJ10153	ARM, LOADING(M)
B 14	TJ12995	SPRING, PINCH ROLLER
B 15	TJ10155	WASHER
B 21	TJ10157	BELT
B 22	TJ10158	WASHER
B 27	TJ10201	BAND, TENSION
B 28	TJ10202	BRAKE(S)
B 29	TJ10203	BRAKE(T)
B 30	TJ10204	ARM, BRAKE(T)
B 31	TJ12611	HEAD, AUDIO CONTROL
B 32	TJ10206	REEL DISK
B 35	TJ10208	GUIDE, TAPE
B 36	TJ10209	SPRING
B 37	TJ10211	MOTOR, CAPSTAN
B 38	TJ12612	LEVER, CHANGE MODE
B 39	TJ10213	SPRING
B 40	TE13053	LEVER, BRAKE(S)
B 41	TJ10215	ARM, BRAKE(S)
B 42	TJ12996	BRAKE, T
B 43	TJ12613	SPRING JOG
B 45	TJ12997	SPRING, LEVER
B 46	TJ10221	SPRING
B 47	TJ10222	SCREW
B 49	TJ10224	ARM
B 51	TJ10226	ARM
B 52	TJ13039	BELT, CAPSTAN
B 53	TJ10228	WASHER
B 54	TJ10161	BRUSH
B 73	TE11971	HEAD, FE
B 74	TJ13017	LUMINESCENCE PRISM
B 76	TJ13018	SPRING, REC ARM
B 81	TJ13019	HOLDER, LEVER
B 83	TJ13041	SPRING, B
B 84	TE11972	HEAD, FE
B 86	TJ13054	BRAKE ASSY
B 87	TJ13055	BRAKE
B103	TJ13021	ARM, REC(A)
B104	TJ13022	ARM, REC(B)
B105	TJ12621	SPRING
B108	TJ10228	WASHER
B121	TJ13637	WORM
B122	TJ10165	WASHER
B123	TJ10166	WASHER
B126	TJ10185	PULLEY
B127	TJ10186	FELT, PULLEY
B128	TJ10167	HOLDER
B129	TJ13023	BUSH, PRESS FIT
B130	TJ13024	ARM, KICK
B131	TJ13025	SPRING, KICK ARM
B132	TJ10231	CLUTCH
B133	TJ12622	ARM IDLER ASSY
B141	TJ10172	PULLEY
B142	TJ10173	SHAFT LOCK
B144	TJ10234	WASHER
B145	TJ12623	LEVER, MAIN
B146	TJ10187	HOLDER, SPRING
B147	TJ10188	STOPPER
B148	TJ13026	CAP, TG
B300	TJ13027	FL ASSY
B302	TJ12652	RACK
B303	TJ12653	DOOR OPENER
B304	TJ12999	DOOR, OPENER
B307	TJ12654	DOOR OPENER
B308	TJ13001	SHAFT, SLIDER
B311	TJ12656	DOOR OPENER
B313	TJ12657	GEAR, DRIVE
B316	TJ12658	SPRING
B317	TJ12659	ARM, LOCK
B319	TJ12661	SPRING
B326	TJ13056	ARM, DRIVE
B327	TJ12625	BUSH CLUCH
B328	TJ13003	ARM, REEL DRIVE
B329	TJ12627	ARM, HOLDER KICK
B330	TJ12628	SHAFT, DRIVE ARM
B331	TJ12629	ROLLER, DRIVE ARM
B332	TJ13004	HOLDER, ARM SPRING
B333	TJ13057	BRAKE, GUIDE
B334	TJ12633	SCREW
B338	TJ12662	WASHER
B339	TJ12634	REEL BASE
B344	TJ12663	GUIDE, CASSETTE
B345	TJ13005	GUIDE, CASSETTE(L)
B346	TJ12655	SHAFT, SLIDER
B347	TJ13006	DECKANGLE, F
B348	TJ13007	DECKANGLE, B
B349	TJ13008	HOLDER, MIRROR(L)
B350	TJ12671	GEAR, SLIDER
B351	TJ13009	MIRROR
B352	TJ13038	GEAR, CASSETTE DRIVE
B353	TJ13011	PLATE, CASSETTE
B354	TJ12676	SLIDER
B355	TJ12677	SLIDER
B356	TJ12678	LEVER, LOCK
B357	TJ12679	LEVER, LOCK
B358	TJ13012	CAM
B362	TJ13013	HOLDER, MIRROR(R)
B363	TJ12682	SUPPOTER, GEAR
L1011	TJ10174	SCREW(M3X9)
L1051	TJ12636	SCREW(M2.6X6)

SYMBOL-NO	P-NO	DESCRIPTION
L1053	TJ10175	SCREW(M2.6X6)
L1061	TJ10182	SCREW(M2X2.8)
L1062	TJ13014	SCREW(M2.6X8)
L1081	TJ10176	SCREW(3X6)
L1091	TJ10235	SCREW(M3X6)
L1101	TJ10177	SCREW(3X8)
L1103	TJ10177	SCREW(3X8)
L1111	TJ13015	SCREW(3X8)
L1112	TJ13015	SCREW(3X8)
L1113	TJ13015	SCREW(3X8)
L1114	TJ13015	SCREW(3X8)
L1115	TJ13015	SCREW(3X8)
L1151	TJ10178	SCREW(M3X4)
L1191	TJ13016	SCREW(M2.6X12)
L1221	TJ10238	SCREW
L1231	TJ10239	SCREW
L1241	TJ10179	SCREW(M2X6)
L1251	TJ10189	SCREW(M2.6X6)
L1291	TJ12684	SCREW(M3X18)
L1311	TJ12685	SCREW(M3X5)
L1321	TJ12686	SCREW(M2.6X12)
L1331	TJ12687	SCREW(M2.6X8)
L1341	TJ12638	SCREW(M2.6X6)
L1351	TE11921	PWB ASSY JNT
		FOR ACCESSARIES
RS501	TE11954	REMOTE CONTROL UNIT
X 1	HL10472	REMOTE HAND SET
X 3	5857952	RF CABLE

SYMBOL-NO	P-NO	DESCRIPTION

ELECTRICAL PARTS LIST

(VT-MX411A/MX411AC/MX411C Model only)

SYMBOL-NO	P-NO	DESCRIPTION
		SEMI-CONDUCTORS
D 01	TC10752	DIODE 1A5
D 02	TC10752	DIODE 1A5
D 03	TC10752	DIODE 1A5
D 04	TC10752	DIODE 1A5
D 05	TC10753	DIODE EG01
D 06	TC10754	DIODE 1N4148M
D 07	TC10754	DIODE 1N4148M
D 08	TC10754	DIODE 1N4148M
D 12	TC10755	DIODE MA188
D 13	TC10753	DIODE EG01
D 15	TC10757	DIODE RU2YX
D 16	TC10792	DIODE SB40
D 17	TC10755	DIODE MA188
D 18	TC10758	ZENER DIODE UZ-6.8BSA
D 52	TC10754	DIODE 1N4148M
D 53	TC10759	ZENER DIODE UZ-9.1BSC
D 54	TC10754	DIODE 1N4148M
D 55	TC10752	DIODE 1A5
D 57	TC10754	DIODE 1N4148M
D 58	TC10758	ZENER DIODE UZ-6.8BSA
D 59	TC10787	ZENER DIODE UZ-30BSB
D301	TC10754	DIODE 1N4148M
D302	TC10754	DIODE 1N4148M
D303	TC10754	DIODE 1N4148M
D304	TC10754	DIODE 1N4148M
D305	TC10754	DIODE 1N4148M
D307	TC10754	DIODE 1N4148M
D501	TC10754	DIODE 1N4148M
D502	TC10754	DIODE 1N4148M
D503	TC10754	DIODE 1N4148M
D504	TC10754	DIODE 1N4148M
D510	TC10754	DIODE 1N4148M
D511	TC10761	LED SID1K10CXM
D701	TC10762	ZENER DIODE UZ-33BSD
⚠IC 01	TC10763	PHOTOCOUPLER PS2501-1D
IC 02	TC10764	IC KIA431
IC301	TC10765	IC LA71000M
IC302	TC10767	IC LC89962
IC501	TC10794	IC M37775M5H317GP(MX411AC)
IC501	TC10795	IC M37775M5H315GP(MX411A/MX411C)
IC502	TC10768	IC KIA339P
IC503	TC10769	IC KIA324P
IC507A	TC10771	IC TA7291S
IC751	TC10773	IC NJU4052BD
IC801	TC10803	IC LA7372
IC851	TC10774	IC LC74723-9068
⚠Q 01	TC10776	TRANSISTOR 2SC4418
⚠Q 02	TC10775	TRANSISTOR 2SC4204
Q 53	TC10777	TRANSISTOR 2SD734F-NP-AQ
Q 54	TC10778	TRANSISTOR KTC3199
Q 55	TC10779	TRANSISTOR KRA103M
Q 58	TC10781	TRANSISTOR KRA101M
Q303	TC10789	TRANSISTOR KRC103M
Q304	TC10778	TRANSISTOR KTC3199
Q305	TC10782	TRANSISTOR KTA1267
Q306	TC10783	TRANSISTOR KTC3193
Q307	TC10783	TRANSISTOR KTC3193
Q308	TC10784	TRANSISTOR KTA1266
Q401	TC10785	TRANSISTOR 2SC3331
Q402	TC10785	TRANSISTOR 2SC3331
Q403	TC10777	TRANSISTOR 2SD734F-NP-AQ
Q404	TC10779	TRANSISTOR KRA103M
Q405	TC10785	TRANSISTOR 2SC3331
Q501	TC10782	TRANSISTOR KTA1267
Q502	TC10789	TRANSISTOR KRC103M
Q503	TC10788	TRANSISTOR PT380FAB
Q504	TC10788	TRANSISTOR PT380FAB
Q511	TC10778	TRANSISTOR KTC3199
Q512	TC10789	TRANSISTOR KRC103M
Q701	TC10779	TRANSISTOR KRA103M
Q851	TC10782	TRANSISTOR KTA1267
		TRANSFORMERS
⚠T 01	TE11955	TRANSFOMER, POWER
T401	TA12565	COIL
		COILS
⚠L 01	TA12553	LINE FILTER
L 03	TA12554	CORE
L 04	TA12554	CORE
L 08	TA12555	COIL 22UH
L 09	TA12555	COIL 22UH
L304	TA12574	COIL 56UH
L306	TA12558	COIL 18UH
L312	TA12575	CORE
L501	TA12561	COIL 100UH
L502	TA12562	COIL 12UH
L504	TA12561	COIL 100UH
L505	TA12561	COIL 100UH
L702	TA12558	COIL 18UH
L703	TA12558	COIL 18UH
L801	TC10751	IC LA7376
L851	TA12567	COIL 18UH
L852	TA12563	COIL 4.7UH
L853	TA12564	COIL 2.2UH
		CRYSTALS
X301	TA12551	CRYSTAL
X502	TA12552	CRYSTAL
		MISCELLANEOUS
CN251	TE11958	CONNECTOR
CN301	TE11965	CONNECTOR
CN501	TE11938	CONNECTOR
CN502	TE11939	CONNECTOR
CN691	TE11922	CONNECTOR
CN692	TE11923	CONNECTOR
CN693	TE11925	CABLE, FLAT
CN801	TE12002	CONNECTOR
CN802	TE11932	CONNECTOR
⚠F 01	TE11947	FUSE 1A 250V
FH 01	TE11948	HOLDER, FUSE
FH 02	TE11948	HOLDER, FUSE
FIP501	TE11949	DISPLAY
JK751	TE11951	JACK
JK752	TE11951	JACK
PS501	TE11953	SENSOR
PS601	TE11953	SENSOR
SW262	TE11957	SWITCH
SW265	TE11957	SWITCH
SW271	TE11957	SWITCH
SW273	TE11957	SWITCH
SW274	TE11957	SWITCH

SYMBOL-NO	P-NO	DESCRIPTION
SW276	TE11957	SWITCH
SW501	TE11957	SWITCH
SW502	TE11957	SWITCH
SW505	TE11957	SWITCH
SW506	TE11941	SWITCH
SW691	TE11924	SWITCH
SW701	TE11942	SWITCH
TU701	TE11956	TUNER UNIT

SYMBOL-NO	P-NO	DESCRIPTION

ELECTRICAL PARTS LIST

(VT-FX600A/FX600AC/FX600C Model only)

SYMBOL-NO	P-NO	DESCRIPTION
		SEMI-CONDUCTORS
D 01	TC10752	DIODE 1A5
D 02	TC10752	DIODE 1A5
D 03	TC10752	DIODE 1A5
D 04	TC10752	DIODE 1A5
D 05	TC10753	DIODE EG01
D 06	TC10754	SWITCHING DIODE 1N4148M
D 07	TC10754	SWITCHING DIODE 1N4148M
D 08	TC10754	SWITCHING DIODE 1N4148M
D 12	TC10755	DIODE MA188
D 13	TC10753	DIODE EG01
D 15	TC10757	DIODE RU2YX
D 16	TC10793	DIODE RK33
D 17	TC10755	DIODE MA188
D 18	TC10758	ZENER DIODE UZ-6.8BSA
D 52	TC10754	SWITCHING DIODE 1N4148M
D 53	TC10759	ZENER DIODE UZ-9.1BSC
D 54	TC10754	SWITCHING DIODE 1N4148M
D 55	TC10752	DIODE 1A5
D 57	TC10754	SWITCHING DIODE 1N4148M
D 58	TC10758	ZENER DIODE UZ-6.8BSA
D 59	TC10787	ZENER DIODE UZ-30BSB
D301	TC10754	SWITCHING DIODE 1N4148M
D302	TC10754	SWITCHING DIODE 1N4148M
D303	TC10754	SWITCHING DIODE 1N4148M
D304	TC10754	SWITCHING DIODE 1N4148M
D305	TC10754	SWITCHING DIODE 1N4148M
D307	TC10754	SWITCHING DIODE 1N4148M
D451	TE11963	CONNECTOR
D452	TC10779	ZENER DIODE UZ-9.1BSA
D501	TC10754	SWITCHING DIODE 1N4148M
D502	TC10754	SWITCHING DIODE 1N4148M
D503	TC10754	SWITCHING DIODE 1N4148M
D504	TC10754	SWITCHING DIODE 1N4148M
D510	TC10754	SWITCHING DIODE 1N4148M
D511	TC10761	LED SID1K10CXM
D701	TC10762	ZENER DIODE UZ-33BSD
D821	TC10754	SWITCHING DIODE 1N4148M
D822	TC10754	SWITCHING DIODE 1N4148M
⚠IC 01	TC10763	PHOTOCOUPLER PS2501-1D
IC 02	TC10764	IC KIA431
IC301	TC10765	IC LA71000M
IC302	TC10767	IC LC89962
IC451	TC10801	IC LA72600M
IC501	TC10794	IC M37775M5H317GP[FX600AC]
IC501	TC10795	IC M37775M5H315GP[FX600A/FX600C]
IC502	TC10768	IC KIA339P
IC503	TC10769	IC KIA324P
IC507A	TC10771	IC TA7291S
IC751	TC10773	IC NJU4052BD
IC801	TC10803	IC LA7372
IC821	TC10804	IC TA7772P
IC851	TC10774	IC LC74723-9068
IC902	TC10802	IC CXA1534S
⚠Q 01	TC10776	TRANSISTOR 2SC4418
⚠Q 02	TC10775	TRANSISTOR 2SC4204
Q 53	TC10777	TRANSISTOR 2SD734F-NP-AQ
Q 54	TC10778	TRANSISTOR KTC3199
Q 55	TC10779	TRANSISTOR KRA103M
Q 56	TC10796	TRANSISTOR 2SB544(E)
Q 57	TC10789	TRANSISTOR KRC103M
Q 58	TC10781	TRANSISTOR KRA101M
Q303	TC10789	TRANSISTOR KRC103M
Q304	TC10778	TRANSISTOR KTC3199
Q305	TC10782	TRANSISTOR KTA1267
Q306	TC10783	TRANSISTOR KTC3193
Q307	TC10783	TRANSISTOR KTC3193
Q308	TC10784	TRANSISTOR KTA1266
Q401	TC10785	TRANSISTOR 2SC3331
Q402	TC10785	TRANSISTOR 2SC3331
Q403	TC10777	TRANSISTOR 2SD734F-NP-AQ
Q404	TC10779	TRANSISTOR KRA103M
Q405	TC10785	TRANSISTOR 2SC3331
Q501	TC10782	TRANSISTOR KTA1267
Q502	TC10789	TRANSISTOR KRC103M
Q503	TC10788	TRANSISTOR PT380FAB
Q504	TC10788	TRANSISTOR PT380FAB
Q511	TC10778	TRANSISTOR KTC3199
Q512	TC10789	TRANSISTOR KRC103M
Q701	TC10779	TRANSISTOR KRA103M
Q821	TC10781	TRANSISTOR KRA101M
Q822	TC10806	TRANSISTOR 2SC3330S-AC
Q823	TC10789	TRANSISTOR KRC103M
Q851	TC10782	TRANSISTOR KTA1267
		TRANSFORMERS
⚠T 01	TE11955	TRANSFORMER, POWER
T401	TA12565	COIL
		COILS
⚠L 01	TA12553	LINE FILTER
L 03	TA12554	CORE
L 04	TA12554	CORE
L 08	TA12555	COIL 22UH
L 09	TA12555	COIL 22UH
L304	TA12574	COIL 56UH
L306	TA12558	COIL 18UH
L312	TA12575	CORE
L501	TA12561	COIL 100UH
L502	TA12562	COIL 12UH
L504	TA12561	COIL 100UH
L505	TA12561	COIL 100UH
L702	TA12558	COIL 18UH
L703	TA12558	COIL 18UH
L801	TC10751	IC LA7376
L821	TA12571	COIL 100UH
L822	5159143	COIL 15UH
L823	TA12563	COIL 4.7UH
L851	TA12567	COIL 18UH
L852	TA12563	COIL 4.7UH
L853	TA12564	COIL 2.2UH
		CRYSTALS
X301	TA12551	CRYSTAL
X502	TA12552	CRYSTAL
		MISCELLANEOUS
CN251	TE11958	CONNECTOR
CN301	TE11965	CONNECTOR
CN451	TE11963	CONNECTOR
CN455	TE11997	CONNECTOR
CN456	TE11998	CONNECTOR
CN501	TE11938	CONNECTOR
CN502	TE11939	CONNECTOR

SYMBOL-NO	P-NO	DESCRIPTION
CN691	TE11922	CONNECTOR
CN692	TE11923	CONNECTOR
CN693	TE11925	CABLE, FLAT
CN801	TE12002	CONNECTOR
CN802	TE11962	CONNECTOR
CN821	TE12003	CONNECTOR
⚠F 01	TE11947	FUSE 1A 250V
FH 01	TE11948	HOLDER, FUSE
FH 02	TE11948	HOLDER, FUSE
FIP501	TE11949	DISPLAY
JK751	TE11991	JACK
JK752	TE11992	JACK
JK753	TE11993	JACK
JK754	TE11994	JACK
JK755	TE11995	JACK
PS501	TE11953	SENSOR
PS601	TE11953	SENSOR
SW262	TE11957	SWITCH
SW265	TE11957	SWITCH
SW271	TE11957	SWITCH
SW273	TE11957	SWITCH
SW274	TE11957	SWITCH
SW276	TE11957	SWITCH
SW501	TE11957	SWITCH
SW502	TE11957	SWITCH
SW505	TE11957	SWITCH
SW506	TE11941	SWITCH
SW691	TE11924	SWITCH
SW701	TE11942	SWITCH
TU701	TE11956	TUNER UNIT

SYMBOL-NO	P-NO	DESCRIPTION

VT-MX411A/MX411AC/MX411C
VT-FX600A/FX600AC/FX600C

HITACHI

VT-MX411A/MX411AC/MX411C
VT-FX600A/FX600AC/FX600C

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